The NATIONAL GEOGRAPHIC MAGAZINE

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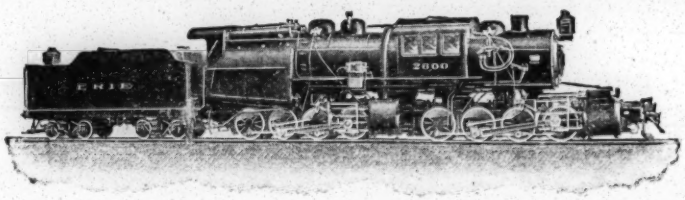

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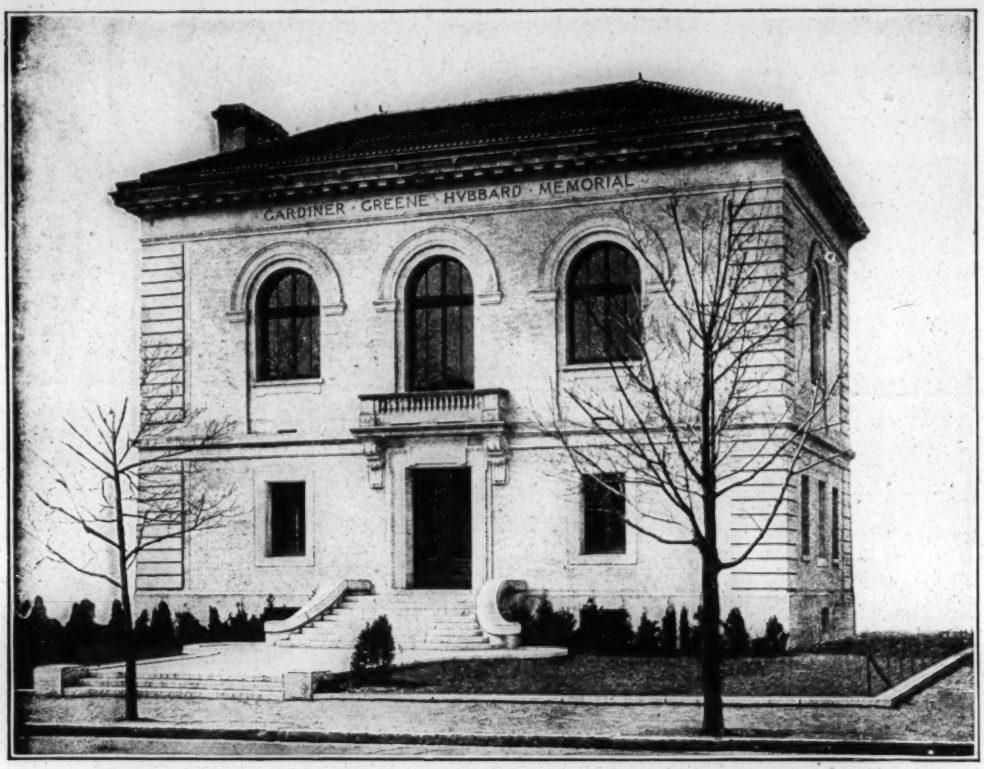

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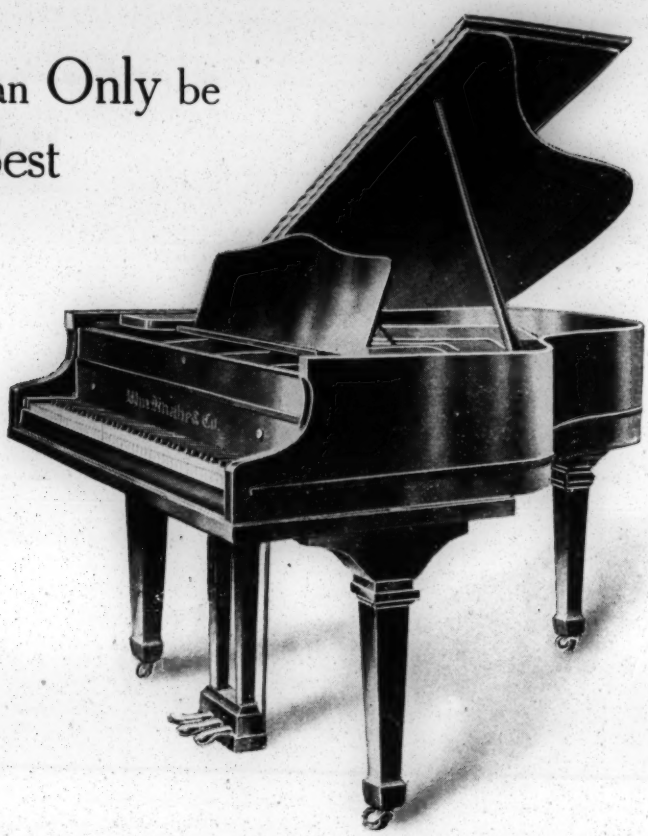

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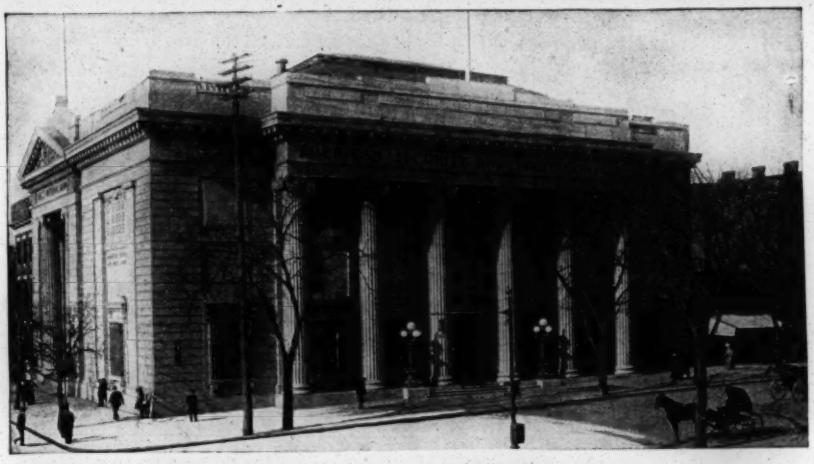

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VOL. XX, NO. 10 WASHINGTON OCTOBER, 1909

THE NATIONAL GEOGRAPHIC MAGAZINE

NOTES ON BURMA*

BY THOMAS BARBOUR

With Photographs by the Author

FEW parts of the wide empire of Britain offer such a tempting array of features which are attractive alike to the ordinary globe-trotter, to the naturalist, the anthropologist, or the hunter of big game as does Burma. The facts and impressions which are recorded here will more than justify this most inadequate sketch if they serve to bring the province farther within the ken of members of the National Geographic Society.

The globe-trotter coming from India cannot fail to be enchanted by the people, as cheery and cleanly as the peasant Hindu is dirty, dull, and sullen. The change in the very atmosphere is more than evident when first one visits the Schway Dagon. The naturalist finds in the mingling of the Indian with the Malayan fauna a bewildering number of birds, reptiles, or insects which will enrich the cabinets of any museum and provide the thrills which only the finding of a long-sought-for novelty can give. I shall have something more to say of the peoples of Burma, and the photographs show some of the more important racial types. Being rather more bored than otherwise by the average tales of big-game hunting, I will merely say that tiger, tsine, sambar, and other deer, as well as most excellent snipe shooting, offer real attraction for those whose interests lie in this line of sport.

Most of the rich province of Burma, now an integral part of India as far as its administration goes, lies to the east of the Bay of Bengal. It extends over about 17 parallels of latitude and has an area of some 236,738 square miles. The population is about 11,000,000. Rich in minerals, it supplies the world with rubies from the famous Mogok mines, where sapphires also occur. There are extensive oil fields at Yenangyoung, on the Irrawaddy below Mandalay. The soil is more than lavish in its yield and the crops of no land are more grateful to the eye than those of Burma.

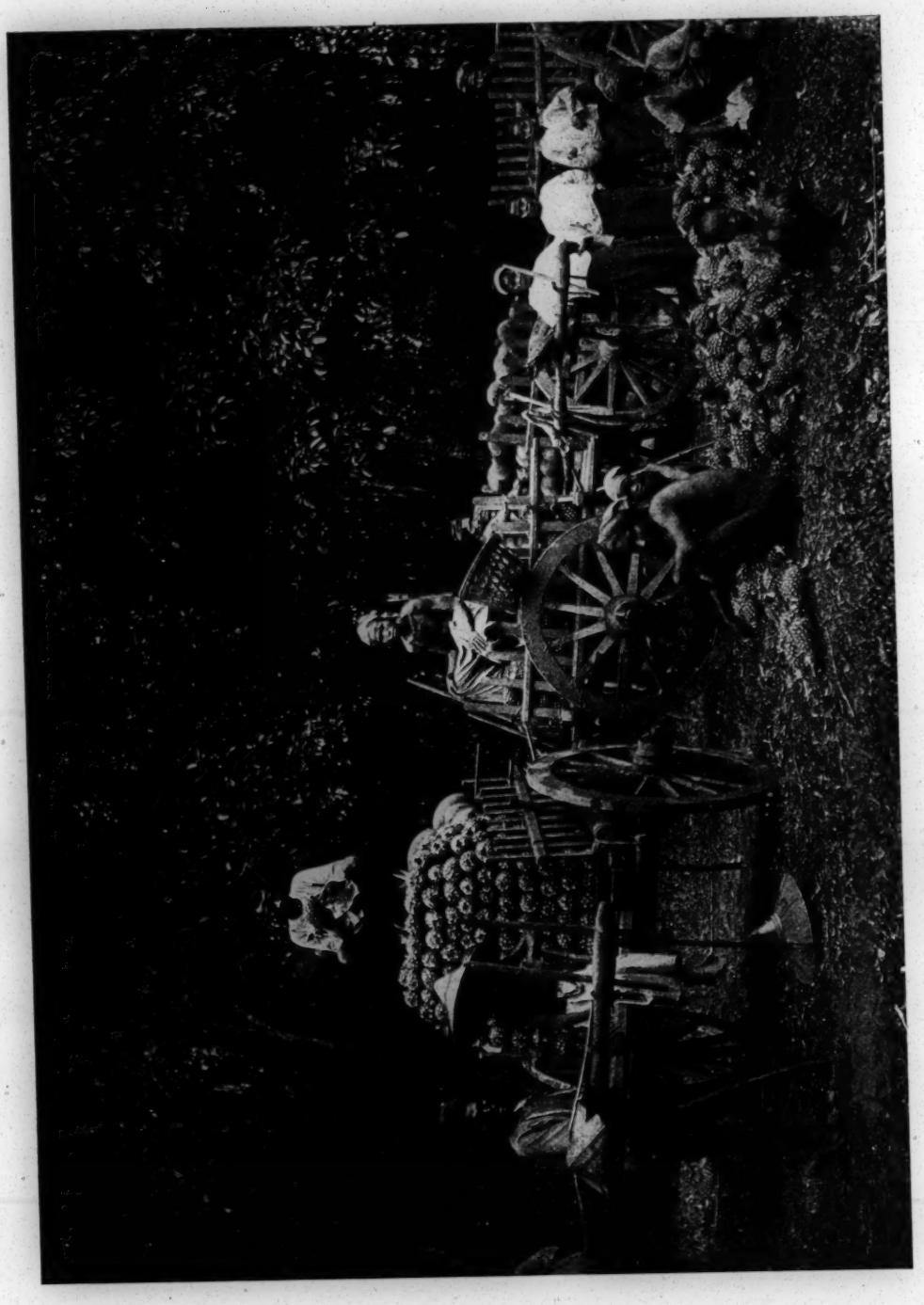
The chief wealth of the land lies in the enormous forests of teak, now ably administered by the service which has made for itself such an enviable reputation in India. At the lumber yards near Rangoon all visitors are astonished at the sagacity of the trained elephants which work piling the heavy teak logs or pushing them into position for the saws. Away in the upper sections of the province the ele-

* Copyright, 1909, by Thomas Barbour

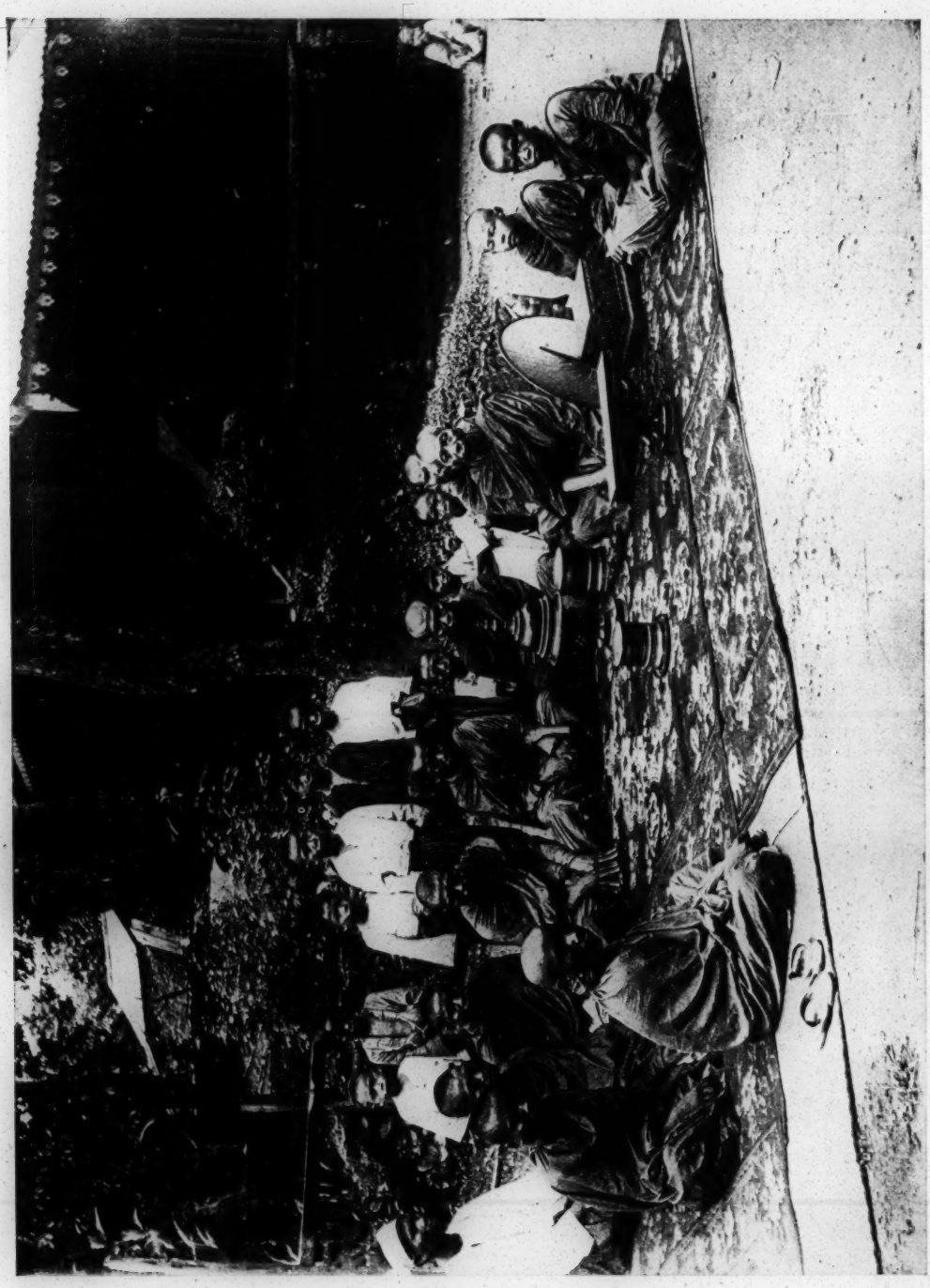
TWO SHAN WOMEN CARRYING A BASKET OF FRUIT: BURMA

This and the succeeding three illustrations are from photographs by Rev. B. M. Jones. All the other pictures accompanying this article are from photographs by Thomas Barbour

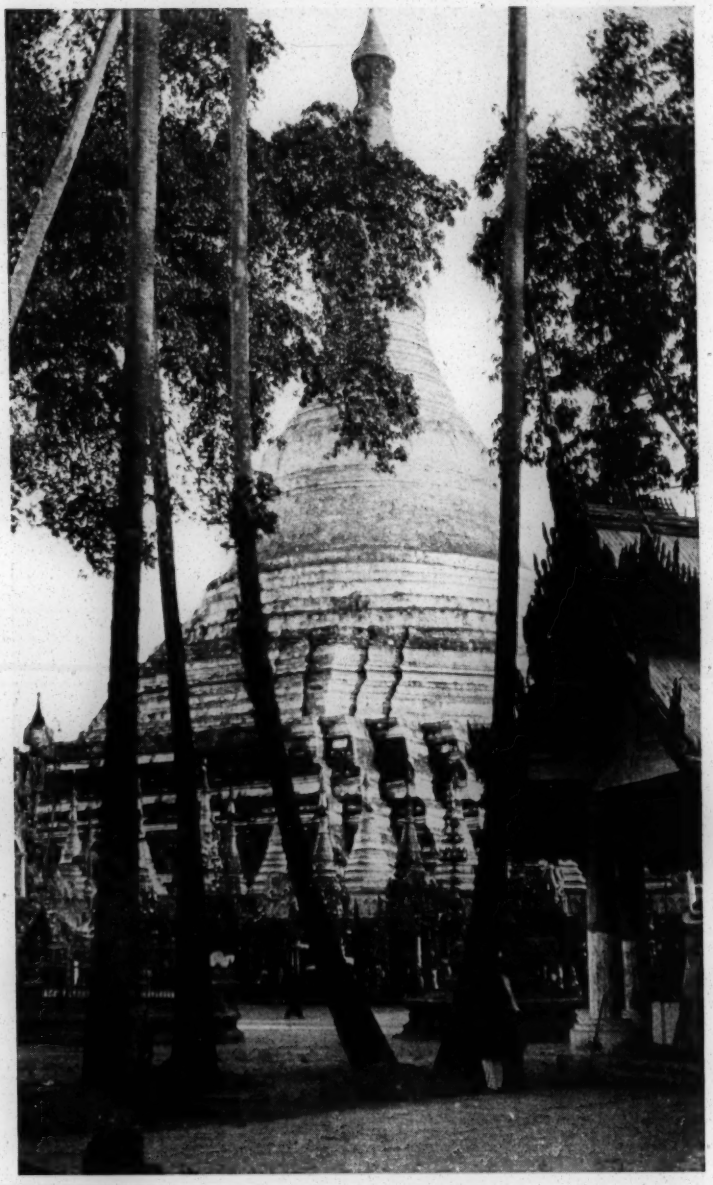
A BURMESE WOMAN



GATHERING PINEAPPLES AND JAKFRUIT IN RANGOON: BURMA

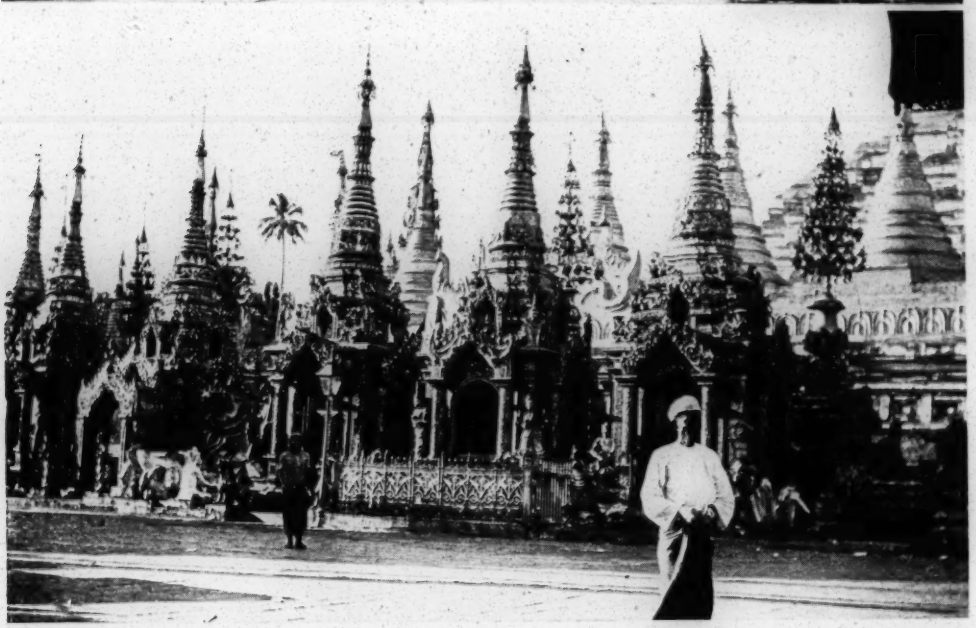


YOUNG BURMESE MONKS, THEIR BOY ATTENDANTS STANDING IN THE REAR

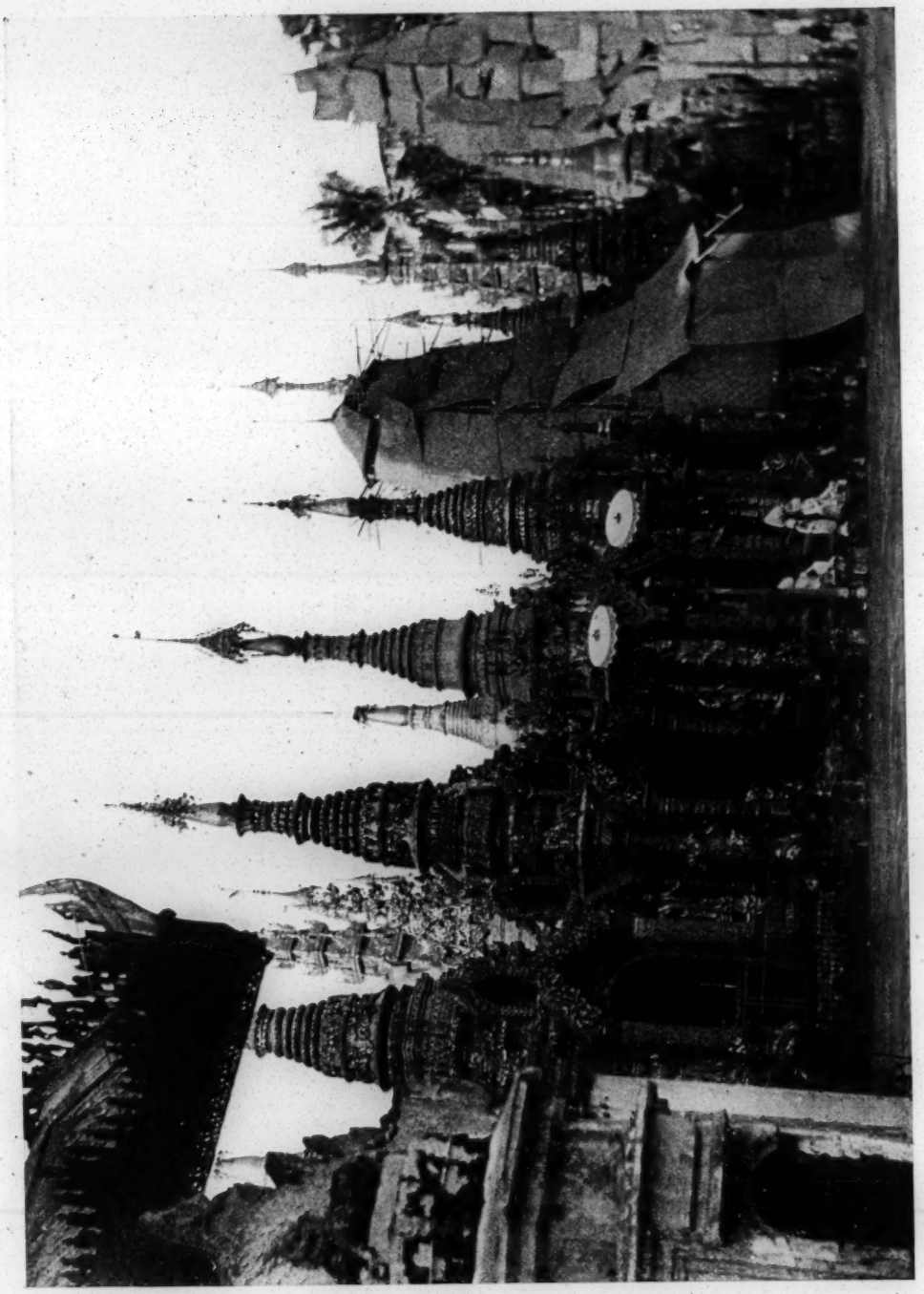


THE GOLDEN SPIRE OF SCHWAY DAGON AT RANGOON (SEE PAGE 852)

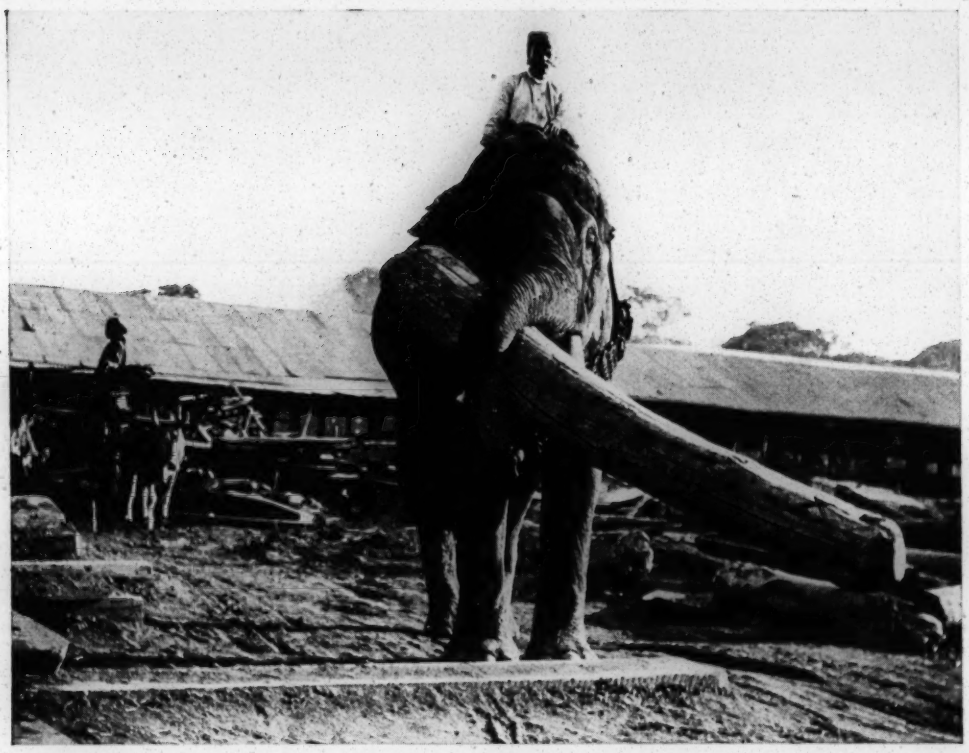
MONASTERIES, REST HOUSES FOR PILGRIMS, AND CHAPELS ON THE PLATFORM ON WHICH STANDS SCHWAY DAGON



SHRINES ABOUT THE BASE OF SCHWAY DAGON'S SPIRE



SOME CHAPELS ARE ALWAYS COVERED WITH PALMLEAF MATS WHILE THEY ARE BEING REPAIRED OR REGILDED



ELEPHANT PILING TEAK

phants may be seen carrying supplies to the camps, bringing the logs to water, and carrying the Europeans about who supervise the cutting of the teak. During the last few years, unfortunately, an epidemic of anthrax, or splenic fever, has more than decimated the ranks of domesticated elephants, while the catching of wild elephants is about given up. Let us hope temporarily.

The best months to visit Burma are really December, January, and February. The rainfall is far heavier than over most of northern India, and for this reason the heat of the seacoast is rather oppressive. Inland the rainfall is less and the climate always better. During the rains Burma, like the rest of the tropics the world over, is no place for the person who is solely on pleasure bent. Often in the lowlands near the coast malaria is prevalent, but the whole land is safe for as much as the average person sees of it; more so, indeed, than very many tropic regions.

Nearly every one lands at Rangoon, but it is not the town to give the new arrival a feeling of joy at reaching Burma. Why more do not stay on the same steamer and go somewhere else is not easily explained, except perhaps that Rangoon ends the route for most of the steamers that go there. The arrival at an unattractive bund, swarming with ragged Hindus, and this either dusty or slippery with oily mud, is the invariable introduction.

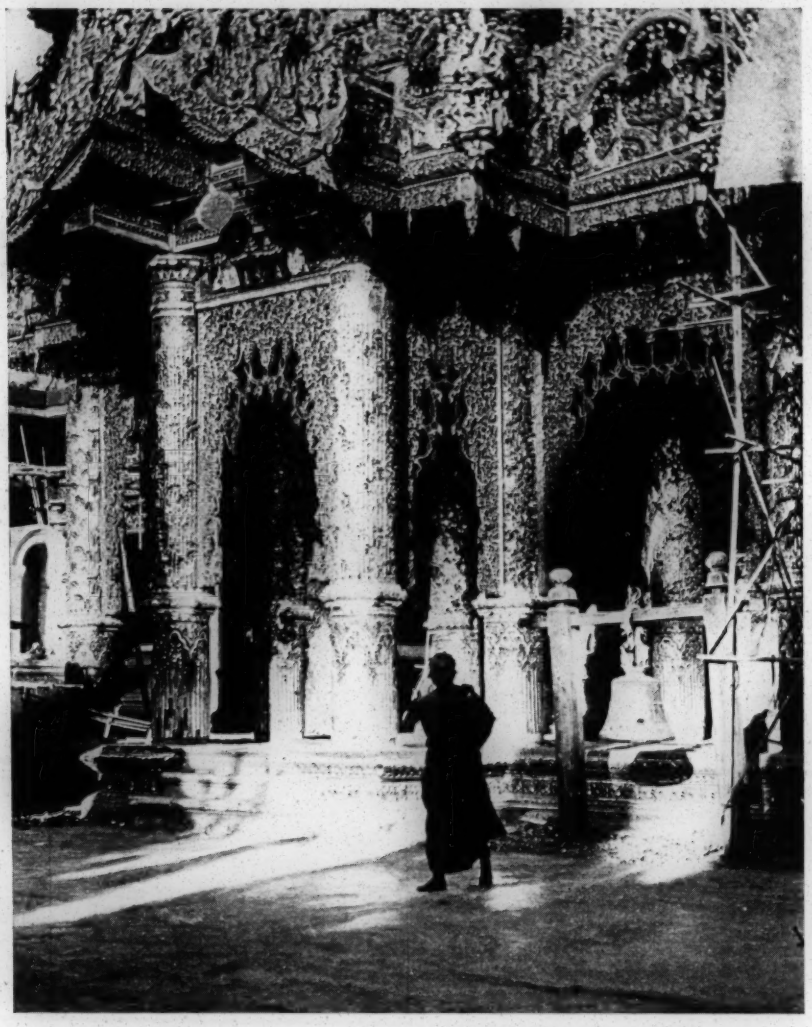
A short walk across an open space, I almost said a park, partially shaded by some scraggly palms and illshapen acacias, leads one to a very mediocre hotel. The trees are soon more forcibly brought to one's attention, for toward eve I think every crow in Burma comes to this grove to roost—and caw. When one waits a bit too long before rising for the

IMAGES IN ONE OF THE CHAPELS WHICH SURROUND RANGOON

"chota-hazree," or early breakfast, on the porch outside one's bedroom, the probability that crows have keen eyes and empty stomachs becomes a self-evident truth. And so Rangoon, with its nondescript architecture and its polyglot crowds, fails to more than disappoint the most easily pleased.

But this tale is not yet ended! On a low, green hill bowered in grateful shade stands one of those splendid monuments which Buddhists raise—the most glorious, overwhelming shrine of all Indo-China, the very high-water mark of the art and architecture of Burma. Imagine a gracefully tapering spire, gilded over all and surmounted by its *hti* or umbrella of skillfully wrought and gilded metal;

ANOTHER VIEW OF THE SHRINES ON THE PLATFORM OF THE SCHWAY DAGON



DETAIL OF CARVING ON AN ENTRANCE TO A CHAPEL

A yellow-robed monk in foreground. They wear their robe like the Roman toga

hang on this *hti* a chime of bells which may be tinkled by the gentlest breeze; think of the spire surrounded by scores of shrines of every sort, decorated with mosaics and richest teak-wood carvings, and then remember that the summit of the great central mass is higher than the top of the cathedral of Saint Paul in London.

No words, however, can do justice to Schway Dagon. Guarded by its characteristic leogryphs and built upon a mound, with groves of graceful palms, it started ages ago as a modest stupa-like mass of brick. It was not allowed by the Burmese to crumble to decay, as is the ordinary pagoda, built today as an act of merit, for nowadays there is little to be gained by repairs. The building is what counts hereafter. But what other pagoda sheltered actual relics not only of Gautama, but of three preceding Buddhas?

Tradition says that men bearing eight hairs from Gautama's beard determined to bury them on this site, where other

A BURMESE FERRY BOAT

This curiously shaped sampan is the river ferry of the common people. The man rows standing up and pushes against the oars

relics already rested, and that in 588 B. C. the original pagoda, about 30 feet high, was erected. This has been cased over by successive layers till now it has a circumference of 1,355 feet and towers 370 feet in air. It is kept brilliantly gilded by subscriptions from the faithful. The surmounting umbrella was made from material valued at $250,000, given by Mindon Min when king of Upper Burma. The labor was voluntary, so the making cost nothing.

The many surrounding pagodas and shrines vary so in size, shape, and style that their description belongs only to the detailed guide-book. Suffice it to say that the near-by view is most impressive about dark, when beggars and candle grease are not very evident. Then the shadowy forms of the praying people and the quiet chanting of the monks cause one to stand still, and the true glory of the Schway Dagon pierces one's inner being as does the heavy booming of a great cathedral bell.

The people who are known today as Burmese are themselves a composite people, but only the most skilled anthropologist or linguist is able to pick the true Burmese of Lower Burma from the Talaing. Their outward appearance is very similar and merits passing mention. Europeans will tell you that they have more than their share of the most common Eastern failing—laziness. This may be so with the men. They are nevertheless a race of true sportsmen, enjoying a good pony as we often think only a European can.

The women are the trades people of the whole country, and, as caste is non-existent, they are as free to live their own lives as with us. Neatly dressed in pleasing silk and linen they come nearer to our Western ideas of what a charming woman should be than do most Orientals.

The dress of the two sexes is essentially similar. Many of the illustrations show this more or less distinctly. A length of cloth with the ends sewn up,

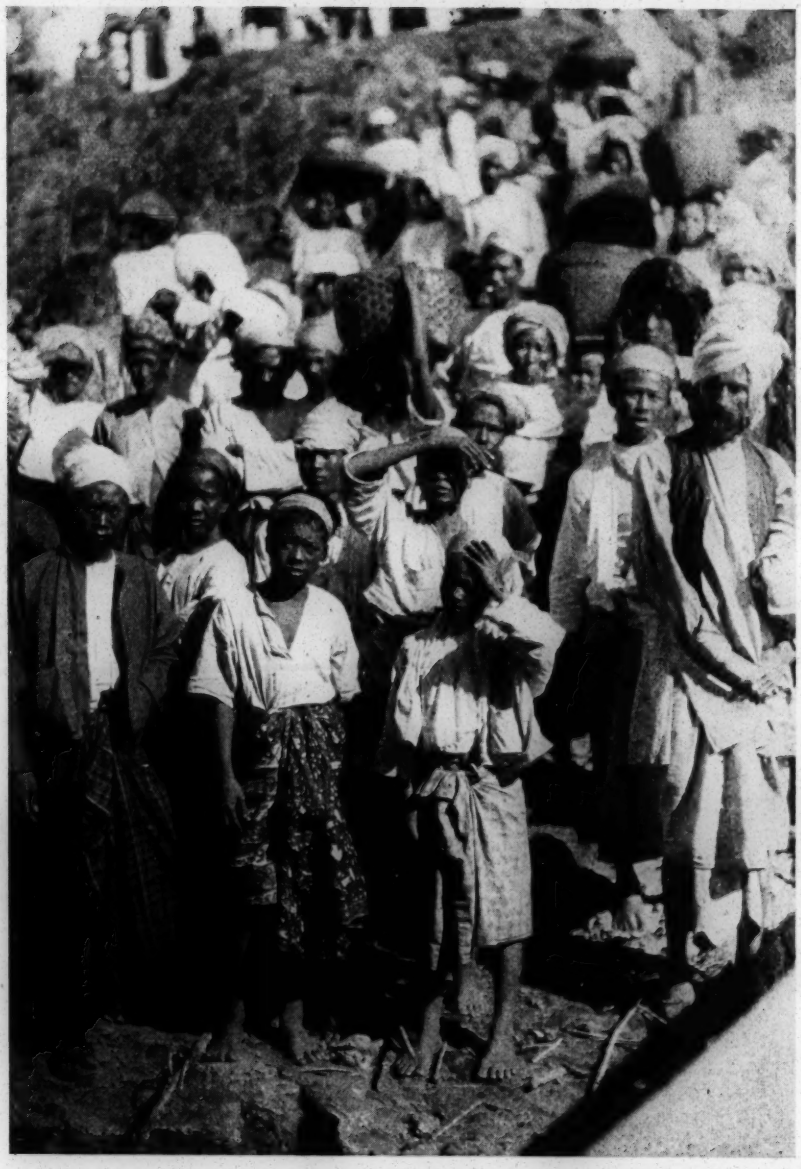
MILITARY POLICE TAKING A BURMESE DACOIT TO HIS EXECUTION

gathered about the body, forms a sort of skirt very like the well-known Malayan sarong. Men and women wear a clean loose linen jacket, and the men a gaudy silk handkerchief on their head. All smoke, and the "whacking white cheroot" of Kipling is simply a cylinder of rolled palm spath enclosing a quantity of ground-up pith and tobacco mixed—about the poorest treat I have ever tried. At present the rather apathetic Burmese is going to the wall before the wave of migration from Hindustan. One cannot but hope, however, that he may be granted strength to prove the fittest to survive in his own land.

Next to the Burmese themselves, the most important people in Lower and Middle Burma are the various races which are grouped together under the generic name of Karen. These forest folk have come into special prominence because of the ease with which they have, many of them, been converted to Christianity. They have never been Buddhists, but have worshiped as a simple animistic cult. As Scott O'Connor, in "The Silken East," has said: "In the modern history of Christianity there is no more interesting episode than the conversion of the Karen. Prepared by prophecies current among them and by curious traditions of a biblical flavor, they embraced with fervor the new creed brought to them by the missionaries and there are today upwards of a hundred thousand Christian Karen in Burma." The photograph shows a couple of these folk who have come from the forests to Toungoo to make purchases for themselves and to see the railway.

Another important people are the Shan. Living as they do largely in the various Shan states, they are under the sovereignty of Britain, Siam, and China. They have split up into a number of tribes with distinct manners and customs. They wander about a good deal, and it is not unusual to see a party of Shans, in their quilted clothing and wearing big flapping straw hats, at the bazaar in Mandalay.

The Kachins, another fierce wild tribe, live in the hills along the border of the Chinese province of Yunnan. At first they are said to have been a peaceful, quiet folk, but persecutions which took place under the régime of the former kings of Upper Burma made of them a truculent and predatory people who were never conquered by the Burmese. The English have won them over to a great extent, and today the Kachin military police of Bhamo are one of the most interesting bodies in the heterogeneous Indian army.



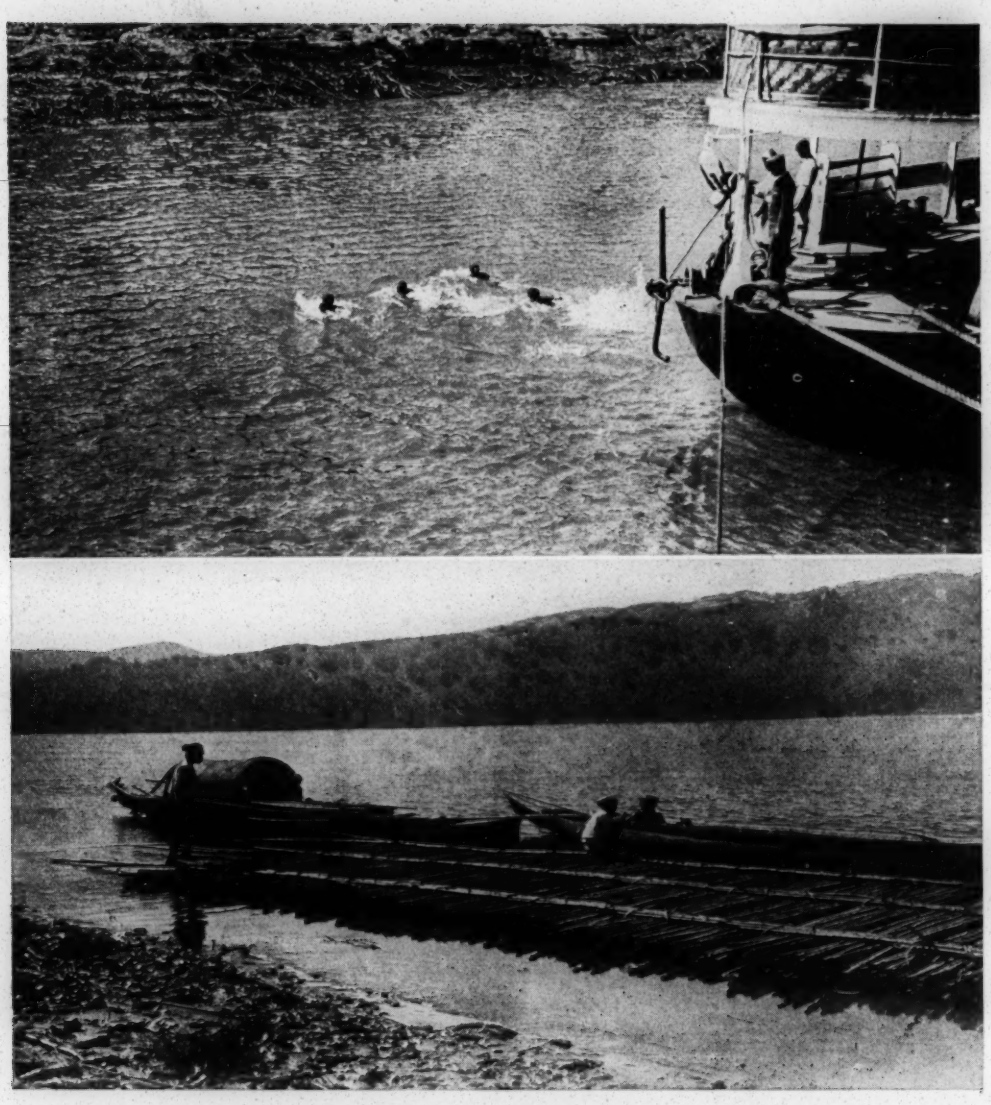
EAGER CROWDS ON THE RIVER BANKS AWAIT THE STEAMER TO MAKE PURCHASES

A "PADY BOAT" FLOATING DOWN THE IRRAWADDY

Thousands of tons of rice are carried in this way from Upper Burma to Rangoon for export

ON THE UPPER REACHES OF THE IRRAWADDY

The current is swift and the river passes through several magnificent gorges. The height of the bank here shows the river's rise during the rains



SCENES ON THE IRRAWADDY

The river steamers do not run at night. Every evening some of the crew carry a line ashore in their teeth and the boat is moored to the bank for the night

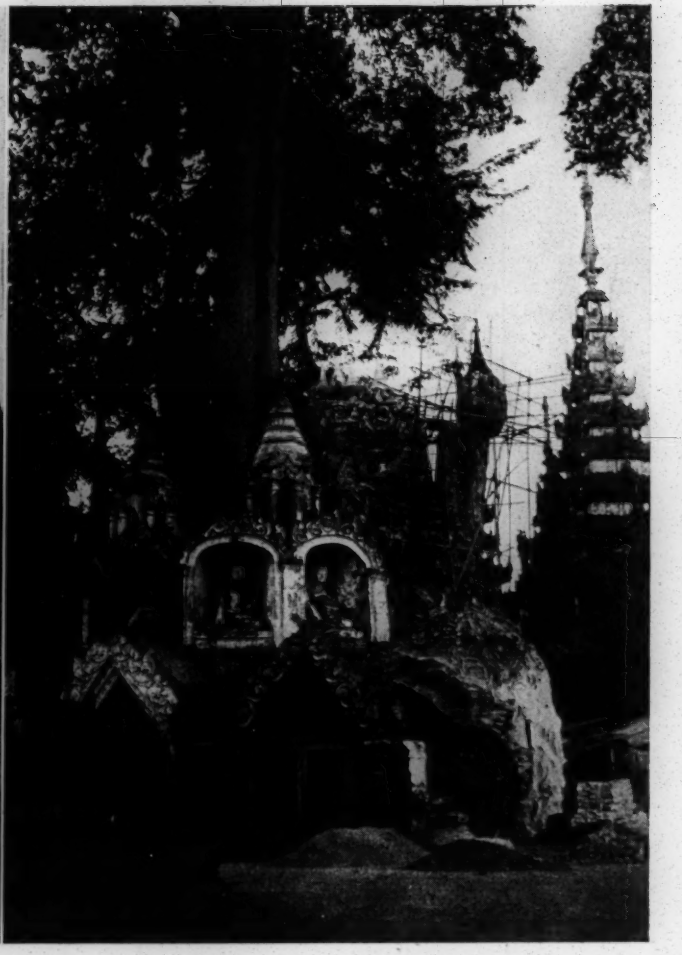
Teak logs are so heavy that they will sink in water. For this reason they are rafted slung under bundles of bamboo

SHANS OF BURMA WITH THEIR FLAPPING STRAW HATS

VILLAGE SCENE IN UPPER BURMA

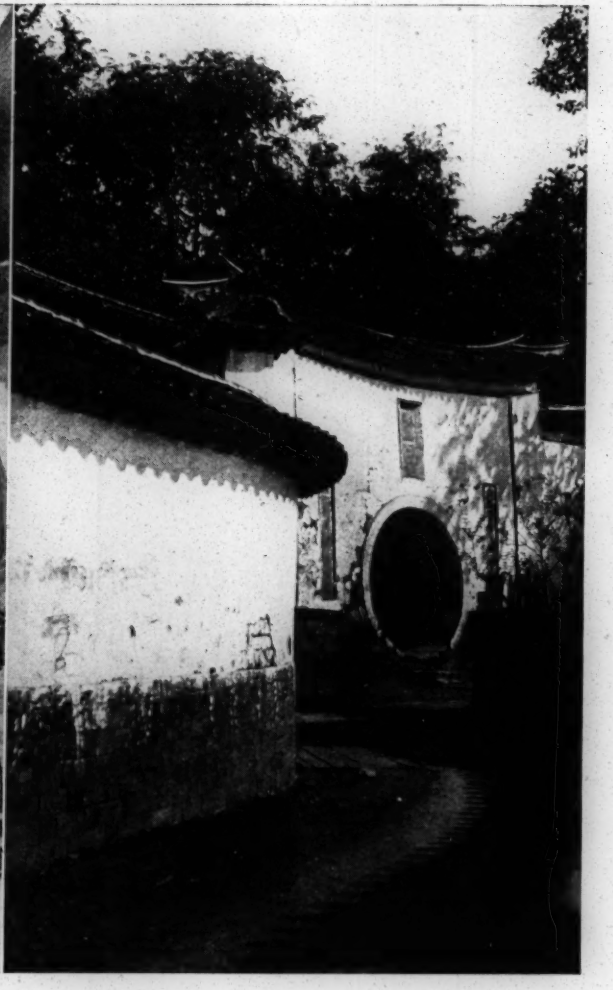
THE VILLAGE IMAGE OF THE BUDDHA

Moved in location, his head is shaded while a new roof is being built over him



MUD AND PLASTER SHRINES ABOUT THE TRUNK OF A SACRED TREE

Entrance to the compound of a Chinese merchant's house in Bhamo. The men are watching the operation of changing a kodak film.



The entrance to an ancient Chinese temple in Bhamo has this round hole. It is said that owing to their squarish outline devils cannot pass through a round door.

KARENS AT TOUNGOO

WOMAN OF UPPER BURMA

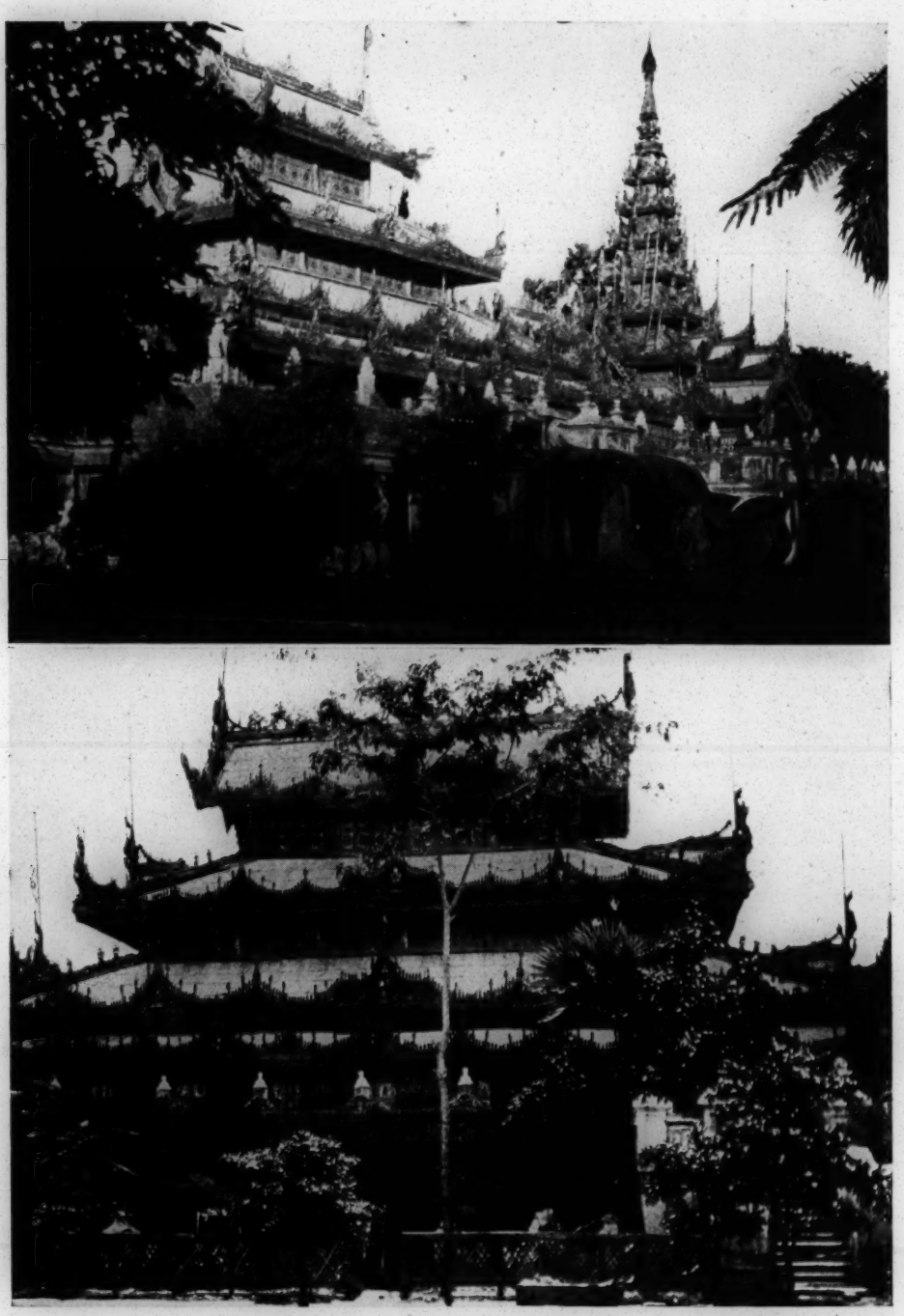
BURMESE LADY AT MANDALAY

WILD KACHINS AT BHAMO

The women wear silver hoops about their necks and many others that are not silver about their waists. Note the many hoops worn around the waist of the first figure on the left

COUNTRY FOLK COME TO BHAMO TO TRADE

Note the curious wicker basket, characteristic of these people



VIEWS OF THE QUEEN'S GOLDEN MONASTERY AT MANDALAY
Considered by many the best example of native architecture in all Burma

THE MOAT OF THE PALACE OF THE KINGS OF UPPER BURMA: MANDALAY: SUNSET

Looked up to with envy by their jungle neighbors, some of whom are always in Bhamo either trading or conferring with the deputy commissioner to settle tribal disputes, they seem to take a special pride in presenting arms as any European passes the guard-house.

Many of them bore and dilate the ear so that it is spread enough to carry a spindle of wood or roll of cloth an inch or more in diameter. They work cleverly in metal, and their heavy cutlasses, called "dahs," are carried over the shoulder by a strong bandoleer. The writer has seen these covered with pieces of tigers' jaws, the proud trophies of the owner. Over the border in Yunnan, Kachins and allied barbarians, called "Miaotsz" by the Chinese, are still the terror of their caravans. These wild tribes, of which there are more than eighty, are scattered over several Chinese provinces, and the study to determine the interrelationships of those mentioned with the Lolos, Shans, and Laotians forms one of the most intricate problems confronting anthropologists at the present time. Of the various Chin races and of the Salon I know nothing worth recording, for I have never even seen them.

The Chinese play an important rôle in the commercial life of Burma, and several ancient trade routes offer future promise of great value. The railway through the Shan states to Lashio can be brought to Chinese territory at any time the British so desire. While Bhamo itself, the highest military post on the Irrawaddy, has a decidedly Chinese look, its architecture and one of its temples suggested Wuchow in Kwang-si, while the hundreds of mules and ponies which hurry through the dusty streets, flogged along by lusty Chinamen, show one how the piece-goods of cotton from Manchester and Birmingham pass overland to where the name of England is but a shadowy myth.

The cotton comes to Bhamo in the steamers of the Irrawaddy Flotilla Company, which for many years has, extremely successfully, played an important part in the development of the land. The steamers, comfortable and clean, afford a

EARLY MORNING AMONG THE SIX HUNDRED PAGODAS OUTSIDE OF MANDALAY

splendid way of seeing the country; the express boats for those whose time is short; and, better still, the cargo boats which tow alongside great bazaar flats and spend weeks in passing up and down the river. The space on the flats is rented out in small parcels to storekeepers, who practically live permanently on board them and who have their regular customers in the various riverside villages. By traveling in these one may be sure of seeing about all the folk in every village passed, as well as having reasonably lengthy stays at all the larger towns.

Perhaps the most remarkable "sight" on the upper river above Mandalay is the unfinished Mingun pagoda, the largest solid mass of masonry in the world. Near by, under a huge roof and slung to a giant beam of teak, hangs the largest perfect bell in the world. The great broken bell of Moscow only is larger.

Buddhism in a comparatively pure form is the religion of the Burmese. Every Burman dons the yellow robe of the monk for part of his life and these pongyis, as they are called, partially justify their somewhat vampire-like existence by keeping alive the rather feeble flame of native education. Many are monks for life, and these with their neophytes live in the pongy kyaungs which are scattered over the whole country. These monasteries serve as rest-houses for pilgrims, and in very many cases are remarkable examples of the characteristic architecture.

The finest of all is the Queen's Golden Monastery at Mandalay, which is here inadequately illustrated. The rich carvings and the gilt now dulled by time give a particularly pleasing and venerable appearance to the building. Native architecture is fast on the decline, however, since Theebaw's reign has ended, very ingloriously, the independent line of Burmese kings. Yet a new land to England, the government has not awakened to the fact that the palaces and formerly royally protected monasteries, of Mandalay especially, need restoring and preserving. The religious spirit of the people cares for the greater pagodas, while the less important ones, overgrown with luxuriant tropical foliage, make pleasing ruins.

The wooden buildings, however, really need the government's care, for they represent as truly the zenith of a people's development in architecture as do the more enduring but hardly more interesting remains in northern India, now so carefully protected. In this case also it is probable that considerable material help would be forthcoming from the richer natives.

THE AFGHAN BORDERLAND

By Ellsworth Huntington

Part II: The Persian Frontier

OUR first intimate contact with Afghanistan was at the fort of Zulfagar, in the northwest corner of the country, where Afghan territory touches Transcaspia on the north and Persia on the west. The Heri Rud River here forms the real boundary between Afghanistan and Persia, although the Afghans lay claim to a considerable area on the west bank. Among the barren Persian hills of white clay capped with a hard corniced layer of dark gravel, our caravan of horses and camels came winding down toward the tamarisk jungle which covers the flood-plain of the Heri Rud. Eastward on the other side of the river, undimmed by the clear December air, we saw a mud fort surrounded by flat-roofed mud houses at the foot of a fine cliff made up of many layers of horizontally bedded sandstone and shale.

At first the village appeared lifeless, but soon it became evident that our approach was noticed, for tiny figures, dwarfed by the deceptive distance, appeared on the higher roofs, and soon a string of white turbans and shining gun barrels could be seen bobbing riverward among the thick, dry tamarisk bushes.

When we emerged from the jungle on our bank of the river a group of soldiers stood opposite us across the broad, muddy stream, while one of their number, a heavy-featured man with well-oiled black hair and a sinister hairlip, was wading waist deep in the cold, swift current with his white nether garments of cotton flung over his shoulder. Coming ashore some distance below us, he clothed himself and forced his way through the bushes, breathing heavily from fear rather than exertion.

"Go away; you can't come here. This is Afghanistan," was his short and peremptory greeting. Our little Turkoman interpreter, Kurban of Serakhs, refused to hear what more he had to say, and sent him unwillingly back to call his chief, with whom alone, according to Oriental ideas, it was fit that foreigners should parley. There was much running to and fro on the other side, with the result that at length a portly man in voluminous white cotton trousers, a huge white turban, and a dark military cloak appeared on the Afghan bank.

"What do you want? What right have you to come here?" he shouted across the broad river in reply to Kurban's flattering inquiry as to his health and happiness.

"Most noble and worthy captain," answered Kurban, with Eastern exaggeration, "my masters are a renowned Russian general, most rich and valiant, and highly in favor with the great Tsar, and a learned American 'Khoja,' who knows all books and can read anything that was ever written. They intend to travel across Afghanistan, and therefore bespeak your hospitality."

"Send them away; send them away. They can't come here," was the captain's quick answer, but, bethinking himself,

he added: "Have the most honorable travelers had a comfortable journey? Most gladly would I receive them, but I am a mere captain. If I let them so much as set foot on this side of the river, my king, the great Amir at Kabul, would cut my head off."

Persuasion was useless; the captain would neither permit us to cross nor accept our invitation to come over into Persia and dine with us. He seemed to stand in thorough terror of the Amir's anger.

We might have crossed without permission, but that would probably have necessitated fighting; for during the next two days, as we marched southward, armed soldiers appeared whenever the windings of the road brought us within sight of the river which forms the boundary for some fifty miles.

A few days later we made another attempt to enter Afghanistan, not with the intention of actually going far into the country, but because my Russian companion was extremely eager to learn something as to the defenses of Kafir Kala, a famous fort supposed to be the strongest on the western frontier of Afghanistan. Sending the camels safely into Persian territory, we started for Kafir Kala one glorious December day—the Russian official and his Turkoman soldier, the writer and his Russian servant, and our Turkoman interpreter—five men, well armed and mounted on good horses. Till noon we rode at a steady jog-trot through an uninhabited desert studded with low, dry bushes. Only twice did travelers appear in the narrow path, and they seemed sadly frightened. We began to think we had lost the road. Then a village came into view across the plain among the tamarisk bushes. Could that treeless group of low, gray walls and flat-roofed mud houses be Kafir Kala? Perhaps those turbaned men running together in the distance were soldiers. Something like gun barrels glistened over their shoulders. Riding nearer we saw that the village was evidently not a fort; but the way in which the villagers gathered in the road to intercept us looked ominous, even though the weapons over their shoulders were only spades for irrigating. As we turned away from their almost violent questions, a handsomely dressed young chief and two soldiers galloped up with a great show of guns, and we stopped perforce to parley in the middle of the village.

"This is Afghan territory. You are foreigners, and you must go back where you came from," began the chief.

"We understand all that," was the answer, "but we are going to call on the commandant at Kafir Kala. Where's the road?"

"There," pointing in the right direction, "but I won't let you go."

"Thank you. Who is this young man?" we asked, ignoring him and turning to the bystanders.

"Hakim Khan, Hakim Khan, the chief of Kuzzil Islam," came from a dozen voices. We understood now how he had happened to arrive. The old men whom we had met by the river an hour or two before had said that they came from Kuzzil Islam. Evidently they had turned back and given the alarm.

A hot discussion began at once between our men and the Afghans as to whether we should go back or keep on. We cut it short by turning our horses' heads toward the fort. That angered Hakim Khan. He said something sharp and short; the crowd surged forward, and half a dozen hands seized our bridles. Involuntarily we pulled out our pistols, and the crowd fell back in such haste that we could not help laughing to see them stumble over one another. That cleared the air, for the Afghans laughed, too, and we all grew friendly. We flattered the Khan by asking about the many villages which he owned and by expressing wonder at the extent of his travels to Cabul and Kandahar, and at his intimacy with the Amir.

"How much you have seen for so young a man," I said, and added the common Oriental question, "How old are you?"

"Fifteen years," was the absurd answer.

"I am a hundred," I rejoined.

He saw the point, and said hesitatingly: "Well, perhaps I am something over twenty. My age is written in a book, but the book is lost and it's a long time since I've seen it."

In spite of Hakim Khan's protestations, we at length set forward, accompanied by the chief and his two soldiers. When the fort came into sight a mile away we yielded so far as to let him send a man to announce our approach.

"Tell the commandant," we said, "that we have ridden far and are tired. We can talk business better if he has tea ready on our arrival."

The soldier dug his heels into his horse's flanks, the beast jumped, and the rider rolled ignominiously to the ground. His awkward way of mounting and the violent flapping of his legs as he once more got under way confirmed our impression that he was no cavalryman, and that if it came to shooting on horseback he would be more dangerous to his friends than to us. Nevertheless it was an anxious time as we watched him galloping wildly off. At length he reached the castle far away across the plain, and little black dots began to come out on the top of the crumbling old pile to look and disappear. Would we be received with tea and peace, or with soldiers and imprisonment? When finally we reached our destination, Hakim Khan led us up past the ruins of an older fort to the main entrance of the once stately castle, a handsome arch now falling to ruins.

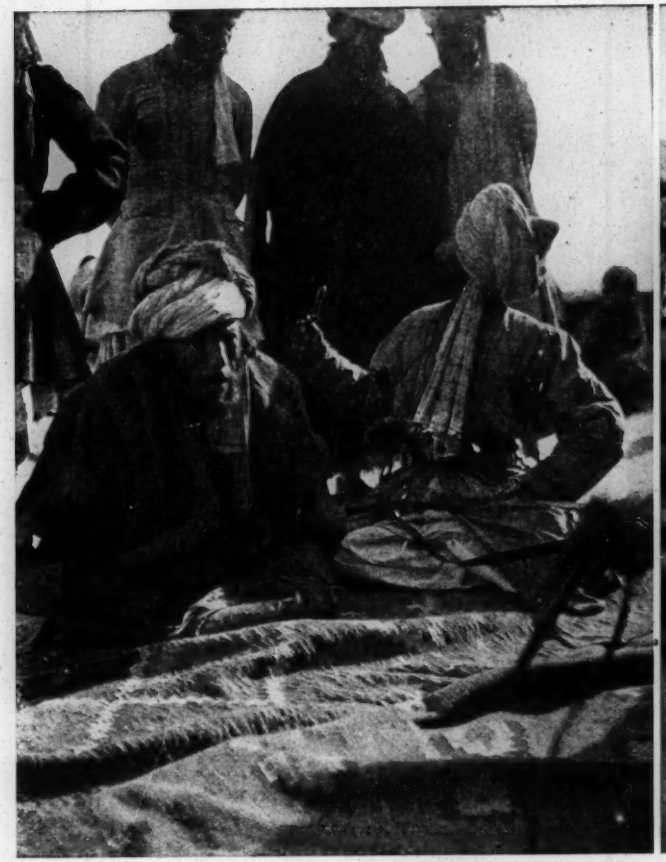
In the doorway stood the commandant, a genuine old martinet, in an ancient British uniform of blue and gilt. His scraggly beard had been dyed some months before, according to the Persian fashion, but now had grown so much that a rim of newly grown gray hair intervened between his dark sun-tanned face and the bright red fringe of older hair, giving him a strangely simian aspect. An armed soldier stood on either side of the chief, while unarmed men lounged here and there. They might have had guns concealed under their long woolen cloaks, but there was no sign of armament except the two men beside the commandant, and a stack of four old-fashioned rifles to the right of the doorway. Through the door we caught a glimpse of tumble-down buildings surrounding a courtyard in the midst of which a single horse was conspicuously tied. To the left of the arch we gladly noticed an adobe platform spread with rugs, which suggested tea and a peaceful reception.

We were not left long in doubt, for the commandant sourly motioned to us to take places on the rugs with himself and Hakim Khan, while thirty or more soldiers ranged themselves cross-legged or asquat in a circle roundabout, and it became clear that they had no guns. At first one of the two armed soldiers stood respectfully opposite the chief, but soon sat down, while his comrade, who was supposed to be pacing before the gateway, often forgot his unaccustomed duty and stopped to listen. We endeavored to ascertain the Afghan attitude as to a certain disputed piece of territory which we really needed to cross for scientific purposes, but the only result was that an old private in the outside circle often took the words out of his superior's mouth, and the Russian official and the commandant kept contradicting one another in the "katydid" fashion of "It is." "It isn't."

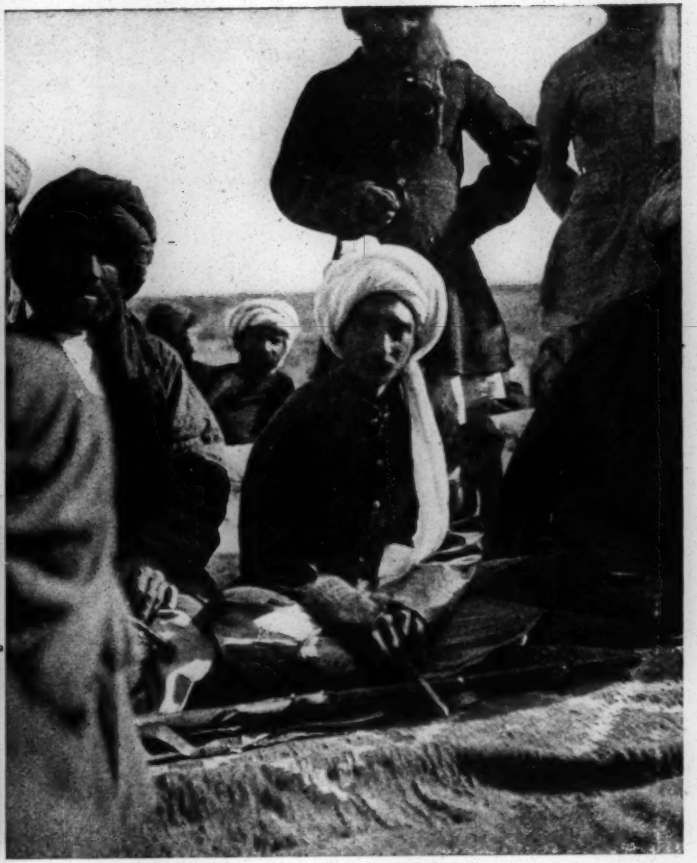
By the time tea arrived it became evident that the Afghans were much more afraid of us than we of them. Kafir Kala, their boasted stronghold, was plainly defenseless. One can imagine the scene on the arrival of Hakim Khan's expert horsemen. The commandant hears the message in consternation and starts away to put on his faded uniform, but pauses to order tea and to direct that the six rifles be brought out. The four old-fashioned ones are to be stacked by the door; the two modern ones are to be carried by the soldiers whose nondescript garments most resemble uniforms. One of the two well-dressed men is to accompany

OLD AFGHAN CHIEFS BESIDE THEIR TENTS: A RUSSIAN OFFICER ON THE LEFT

AFGHAN CULTIVATORS AT A VILLAGE NEAR KAFIR KALA: THE MAN IN A SHEEPSKIN CAP IS A TURKOMAN



THE SOLDIERS OF HAKIM KHAN

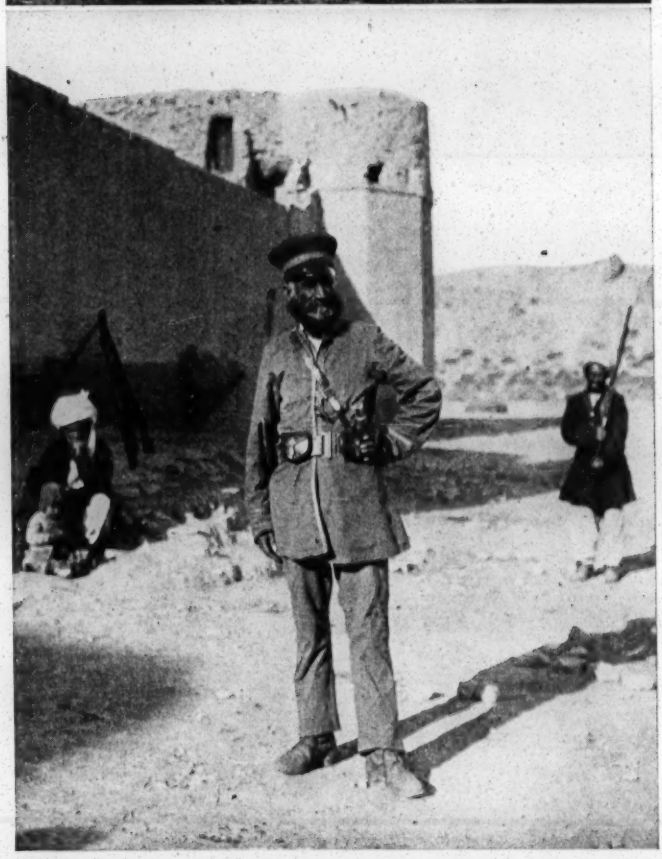


HAKIM KHAN, THE AFGHAN CHIEF OF KUZZIL ISLAM, WITH ONE OF HIS SOLDIERS

KAFIR KALA, THE MOST IMPORTANT FORT ON THE WESTERN FRONTIER OF AFGHANISTAN

COMMANDANT AND SOLDIERS AT KAFIR KALA: IN THE BACKGROUND THE RUINS OF AN OLD FORT MAY BE SEEN

PROSPEROUS AFGHANS AND THEIR SONS



THE COMMANDANT OF KAFIR STANDING OUTSIDE THE WALLS OF THE FORT, WITH GUNS STACKED ON LEFT, AND ONE OF THE FEW UNIFORMED SOLDIERS ON RIGHT

A PERSIAN VILLAGE ON THE AFGHAN FRONTIER WITH A ROUND LOOP-HOLED TOWER OF STONES FOR PROTECTION AGAINST AFGHAN RAIDS

INHABITANTS OF THE VILLAGE WITH THE ROUND LOOP-HOLED TOWER

GATE OF THE FORT OF KAFIR KALA; RUSSIAN OFFICER AND TURKOMAN INTERPRETER AMONG A CROWD OF AFGHAN SOLDIERS

BAKING BREAD IN SEYISTAN ON THE AFGHAN BORDER

his chief, the other to play sentinel. While this is being arranged with the advice and consent of the whole garrison, the women go up on the roof to see what they can of the attacking army, and the small boys run to and fro and report progress.

When we bade the Afghans a friendly adieu after an hour's talk and some photography, we were put in charge of an escort, which consisted of a single ragged soldier, who accompanied us around the corner to point out the way back to Persia. Three months later, on our return from Seyistan by another route, we heard the sequel to our raid on Kafir Kala. The representative of the Persian foreign office at Birjand asked if it were true that Russia and Afghanistan were at war. He had heard, so he said, that Russia had sent a party of Cossacks to attack an Afghan fort, and many men had been killed in a bloody fight.

At Turbat the Russian consul, whose guests we were, had received a report that a Russian officer and his companion had been arrested and imprisoned by the Afghans. He at once sent one of his secret agents to Afghanistan to investigate the matter. From this man's report it appears that when news of our visit to Kafir Kala reached the authorities at Herat, the chief town of western Afghanistan, they summoned the commandant to give an account of himself. His inability to arrest us was clearly due to the fact that some higher official had squandered the money intended for the equipment of the fort. Some one, however, must be punished. The commandant was accordingly removed from office, publicly whipped, and sent to the smallest available post. A new man was sent to Kafir Kala, and with him a hundred well-armed cavalry, so it was said.

Evidently the Afghans have no intention of allowing foreigners to enter their country. The people of the west are by all accounts the mildest of the inhabitants of Afghanistan, but even they are by no means to be treated lightly, as we saw again and again. One day soon after our raid on Kafir Kala we stopped at a group of low, black tents belonging to Afghan nomads who were encamped in territory which is in dispute between Afghanistan and Persia. Being short of supplies, we bought a sheep and some bread, and at the same time procured a new guide. After purchases had been completed the caravan and the new guide started off across the desert hills, while the Russian official and I remained behind with the interpreter to pay the bill. The Afghans demanded an exorbitant price, which Kurban refused to pay. After an interminable dispute, we attempted to cut the matter short by handing over the money.

"Here," we said, "is twice the price of the sheep. We are willing to pay so much, but not ten or even five times its market value," and with that we started to ride away. Thereupon a black-browed Afghan seized the bridle of the interpreter's horse, which caused the Russian to ride his horse at the man to frighten him. The Afghans at once became excited and ran to the tents for their guns, while we began to ride slowly away. They came out ready to shoot and we looked for grave trouble, but a woman called out: "Don't shoot, don't shoot. If you kill one of them, their men will kill my husband, who has gone with them as guide."

We got away safely, but the guide proved most unsatisfactory. Twice he misled us, and instead of taking us to villages or nomad encampments brought us to desolate springs in the wilderness after we had stumbled through darkness for three or four hours. At the second spring we found ourselves short of bread, although we had meat enough to keep us from suffering. That night a caravan of Afghan salt-gatherers came along the same track that we had followed and encamped about a third of a mile away. In the morning our men went promptly to buy bread of them, but did not succeed in getting any. "Oh, yes," said the Afghans, "we have flour enough, but we do not care to sell it."

Naturally our men came back in rather

bad humor. They were talking of the meanness of the caravan men when some of the Afghans were seen coming toward the spring with buckets in their hands.

"Ah," said one of our Turkomans, "I know what we can do. We will not let them get any water until they sell us some bread."

Accordingly our men all got out their guns and stood around the spring to warn the Afghans off. At first the Afghans thought it was a joke, and so did we. They went off apparently to get some flour, but it soon appeared that they had no intention of satisfying the needs of our men. On the contrary they came strolling back to the number of fifteen or twenty, not carrying food, but grasping something long and hard under their long gray gowns of wool. Evidently they had brought their guns and meant to fight if necessary. It was a case of food against water. To allow a quarrel to arise there in the wilderness would have been suicidal. We called our men to their senses and let the Afghans get what water they needed.

During the next hour or two we made friends with them, and then they voluntarily offered us some bread. The method of cooking it was very different from that employed in the oases, where ovens of mud shaped like beehives, with a hole in the top, are heated with a fire of weeds, and the dough is stuck against the inside of the hot oven, where it hangs until it is so far cooked that it falls down into the ashes. The bread of the Afghan caravan was cooked by heating small, round cobblestones in the fire and then poking them out and wrapping dough an inch thick about them. The balls thus formed were again thrown into the fire to be poked out again when cooked. The bread tasted well there in the desert, although in civilized communities the grit and ashes would have seemed unendurable.

After good-fellowship had been established the Afghans actually sold us some flour. The camp where we used it a little later happened to be beside the sandy bed of a trickling salt stream, which was drinkable in winter, but absolutely unusable in summer, when evaporation is at its height and the salt is concentrated.

"See," said one of our Turkomans, as we dismounted, "here is some sand. Tonight we can have some good bread."

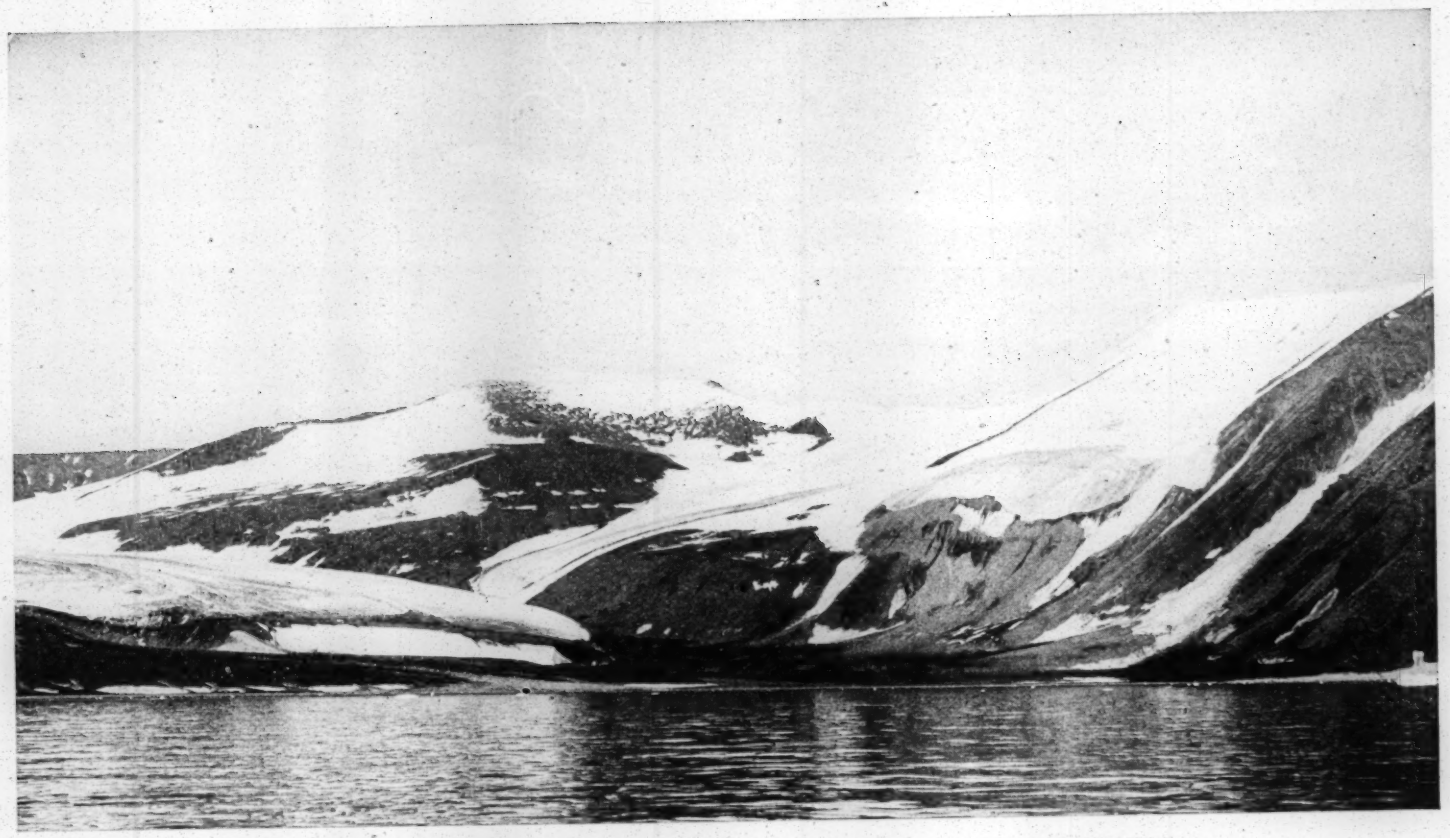
When some dry twigs had been gathered he proceeded to smooth off a bit of the cleanest sand and built upon it a hot fire. When the sand was thoroughly hot he raked off most of the coals and smoothed the sand very neatly. Meanwhile one of the other men had made two large sheets of dough about three-quarters of an inch thick and eighteen inches in diameter. Between these he placed a layer of lumps of sheep's tail fat, making a huge round sandwich. This was now spread on the hot sand, coals mixed with sand were placed completely over it, and it was left to bake. Now and then an edge was uncovered, and a Turkoman smelled it appreciatively and rapped on it to see if it was yet cooked. When the top was thoroughly baked the bread was turned over and covered up again. It tasted even better than the Afghan bread, after it had cooled a little and the sand and ashes had been whisked off with a girdle. The Turkomans are so accustomed to life in the sandy desert that they think it impossible to make the best kind of bread without sand, while the Afghans, who live in the stony mountains, think that cobblestones are a requisite.

The Afghans, like the Persians, have developed some of their worst characteristics largely by reason of the hardness of the physical conditions under which they live. The experiences described above took place on the borders of the Desert of Despair, a place where men and animals die of hunger and thirst and their companions have no pity. The caravan with which our men tried to quarrel was about to return across the northern edge of the desert with salt from the Lake of Khaf to be sold in Afghanistan. They reported that on the outward journey they had been delayed and two of their number had died of hunger.

MAT HENSON, THE FAITHFUL COLORED MAN WHO HAS MADE SO MANY TRIPS WITH COMMANDER PEARY

THE COAST OF SOUTH GREENLAND JUST AT THE ARCTIC CIRCLE, NEAR THE DANISH SETTLEMENT OF HOLSTENBORG

The growth of moss in this region is remarkable, at some places over a foot in height. There are numerous trees found which never reach more than 3 feet in height, usually only 15 inches; they are the birch and willow. This picture contrasts with the following one, on page 879.



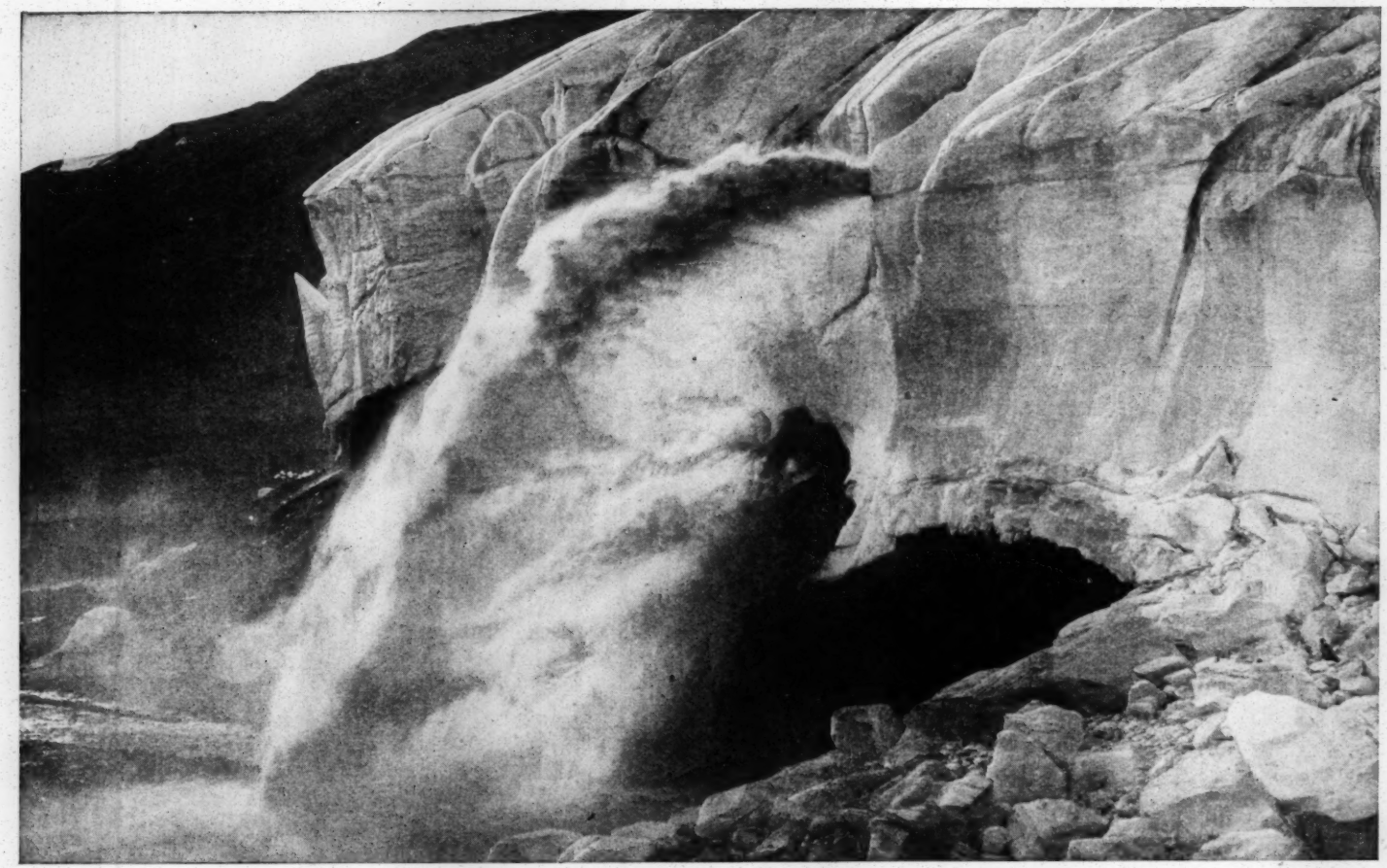
THE COAST OF NORTHUMBERLAND ISLAND NEAR THE NORTHWESTERN END

Here are seen numerous small glaciers coming down from the ice-cap almost to the water's edge. The illustration also shows the terminal moraine

SOUTH GREENLAND ESKIMOS OF THE SETTLEMENT OF DISCO

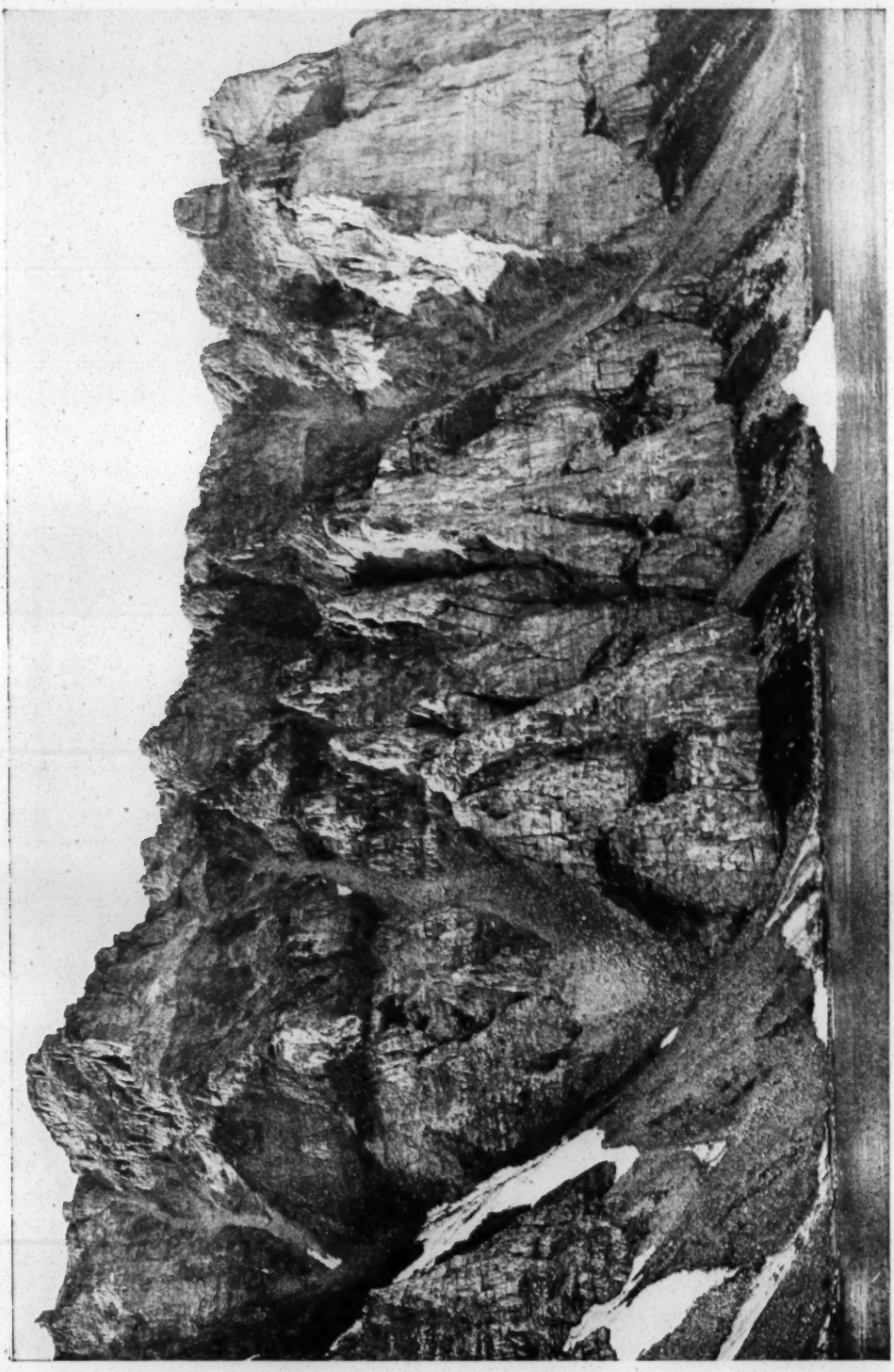
This shows very plainly the intermixture of native and Danish blood. Several of the bead collars are well shown; also the decoration of the long sealskin boots of the women

In contrast is seen a typical group of north Greenland Eskimos, taken at the village of Karnah, this, as in the preceding picture, showing only the women and children. The clothing seen here is mostly of sealskin, though the boys have bearskin pants; some of the women have trimmings of blue fox skin. In the background is seen one of their tents or tupics.



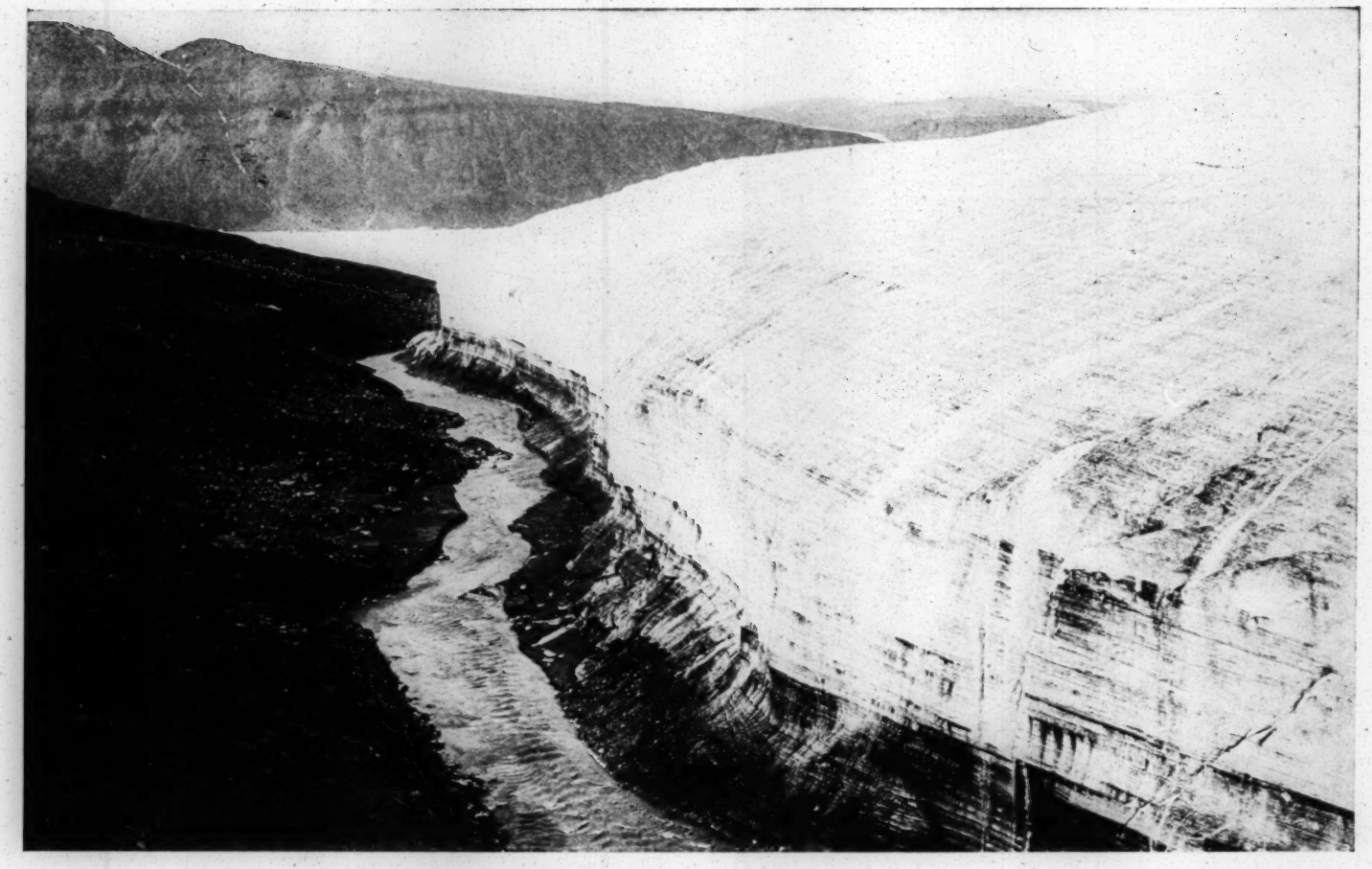
A CURIOUS WATERFALL SPRINGING FROM THE END WALL OF A LARGE GLACIER

At the time this picture was taken the temperature was 42° F., and the ice on the surface of the glacier was melting so rapidly that the waterfall was formed. The dark portion below the water is not a cave, but clear blue-black ice



THE FORBIDDING COAST OF HAKLUYT ISLAND, INGLEFIELD GULF
These rocks are, however, the homes of countless birds

SENTINAL NUNATACK AT THE HEAD OF BOWDOIN BAY, WITH THE BOWDOIN GLACIER AT ITS FOOT



SIDE WALL OF THE BOWDOIN GLACIER

Showing the stratification of the glacier and the weathering due to the melting snow surface. The stream running at its foot comes from the melting of the glacier

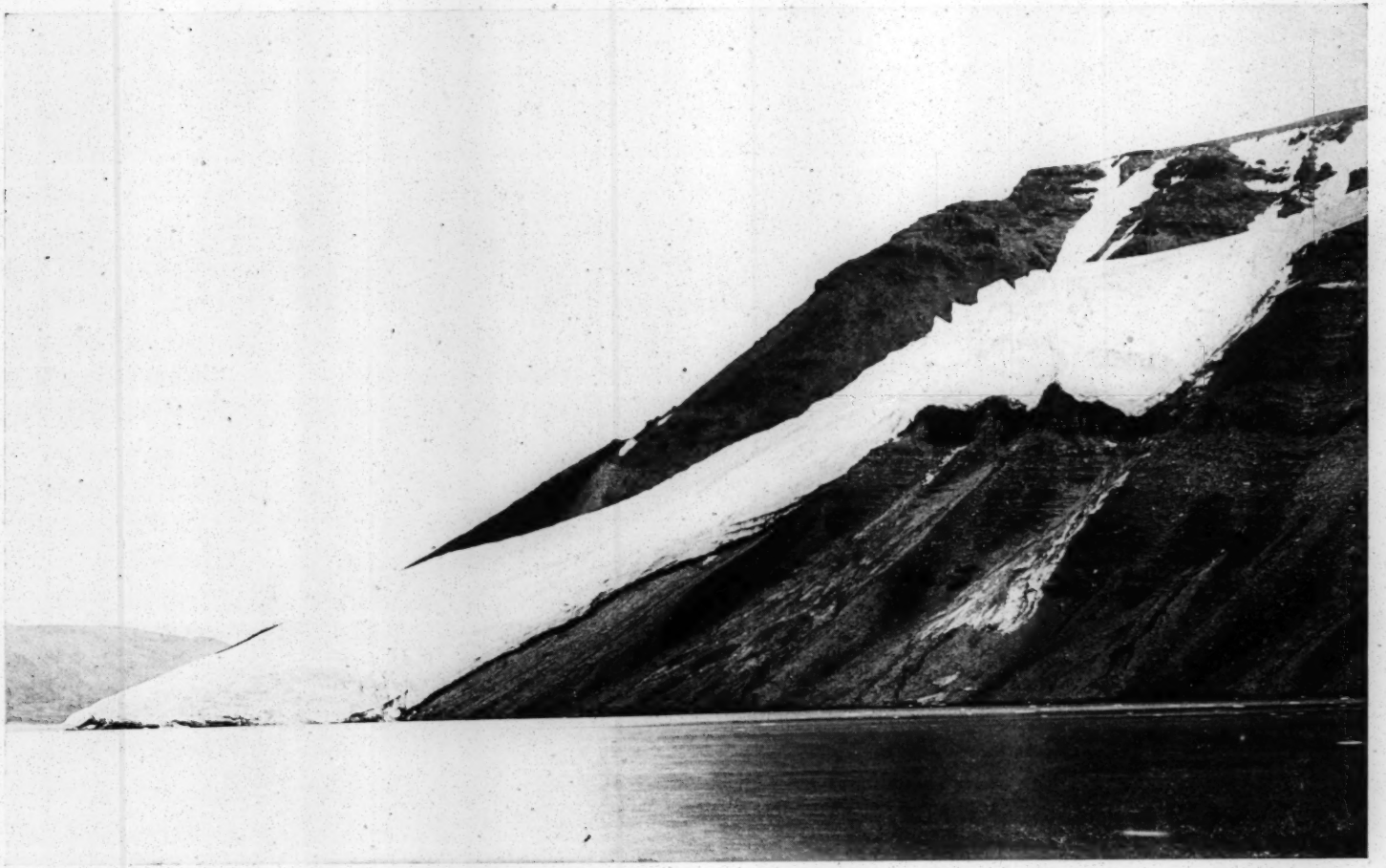
It was from this point that Commander Peary made his two successful sledge trips across the ice-cap of Greenland, each being over 1,000 miles in length, 1892 and 1895

Turning the camera from the spot where the last picture was taken, this arctic flower garden was found, the poppies predominating, mostly the yellow ones, though there are a few white with pale salmon-pink tinting

A FAMILY GROUP, NUCHTA, MISS BILL, HER TWO SISTERS AND STEPMOTHER

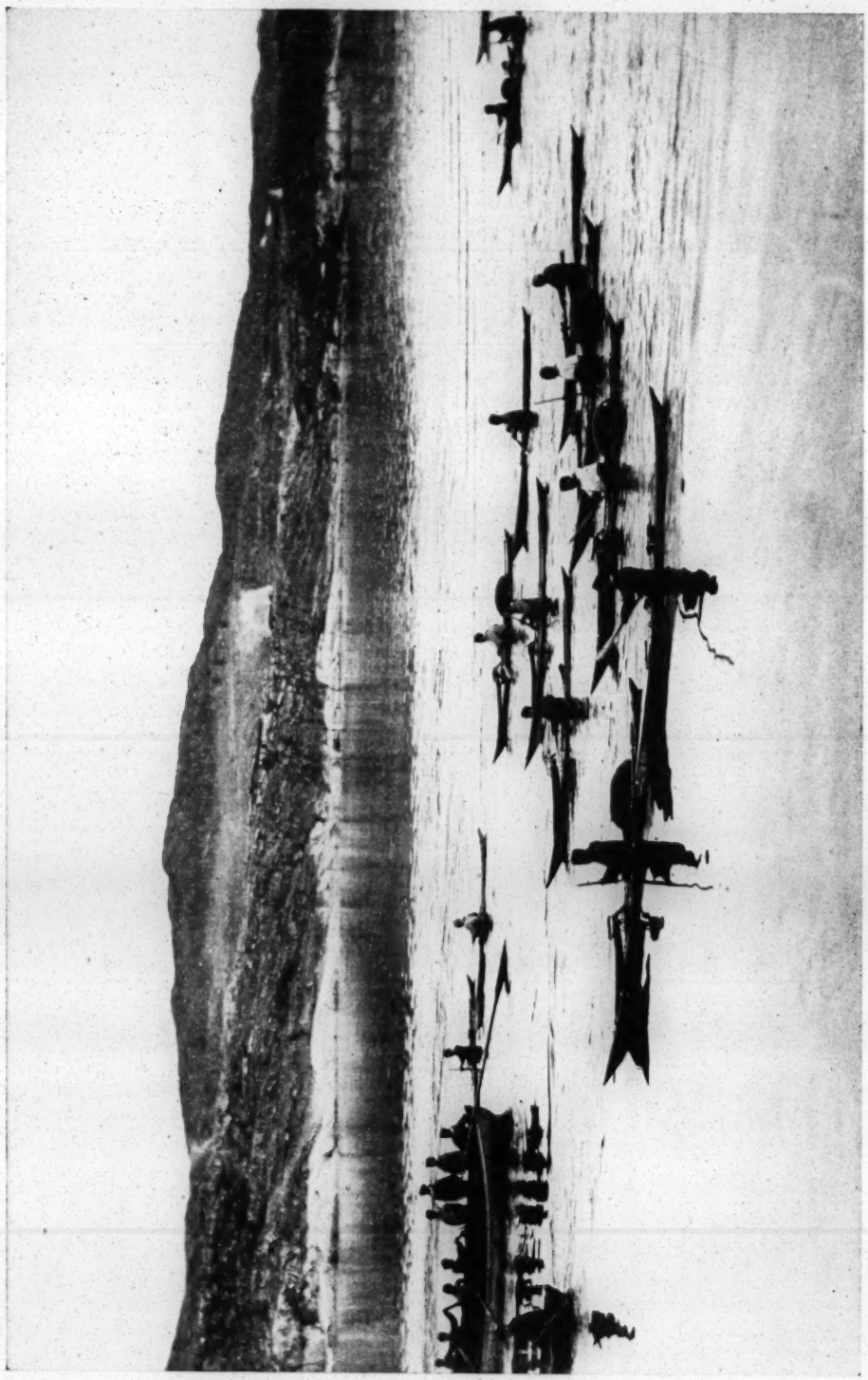
Miss Bill, the second figure on the left, is dressed in the costume of the south Greenlanders, as she had at that time just returned from her trip to the United States

A GROUP OF ESKIMO MEN, SHOWING COSTUMES AND HUNTING IMPLEMENTS



A SMALL RIBBON GLACIER, SHOWING THE FORMING OF CREVASSES BY ITS PASSING OVER DYKES OF HARD ROCK

The beautiful illustrations of scenery and Eskimo life in North Greenland, given on pages 877 to 891, are from photographs by Dr Theodore Le Boutillier, Secretary of the Geographical Society of Philadelphia. They were taken by him during a summer trip several years ago in one of Commander Peary's auxiliary expeditions, and are here published for the first time.



SOUTH GREENLAND ESKIMOS IN THEIR KAYAKS OR SKIN-COVERED BOATS

THE DISCOVERY OF THE POLE

WE print herewith the reports of Dr F. A. Cook and Commander Robert E. Peary announcing the discovery of the North Pole April 21, 1908, and April 6, 1909. Before the National Geographic Society can, however, accept the conclusions of either Commander Peary or Dr Cook that the North Pole has been attained, it will be necessary that the scientific records and data of each explorer be carefully examined by its Committee on Research or by some body or commission acceptable to the Board. The Society takes this position not from any distrust of the personal integrity of either explorer, but because of the many calculations that enter into the determination of the pole. The National Geographic Society urges Commander Peary and Dr Cook speedily to submit all their observations, notes, and data to a competent scientific commission in the United States.

First Report by Dr Frederick A. Cook, Sept. 1, 1909

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AFTER a prolonged fight against famine and frost we have at last succeeded in reaching the North Pole.

A new highway, with an interesting strip of animated nature, has been explored.

Big game haunts were located which will delight the sportsman and extend the Eskimo horizon.

Land has been discovered upon which rest the earth's northernmost rocks.

A triangle of 30,000 square miles has been cut out of the terrestrial unknown.

The expedition was the outcome of a summer cruise in Arctic seas. The yacht *Bradley* arrived at the limits of navigation in Smith Sound late in August, 1907. Here conditions were found favorable to launch a venture for the pole.

Mr John R. Bradley liberally supplied from the yacht suitable provisions for local use, and my own equipment for emergencies served well for every purpose of Arctic travel.

Many Eskimos had gathered on the Greenland shores at Annootok for the winter bear hunt. Immense caches of meat had been gathered. About the camp were plenty of strong dogs.

The combination was lucky, for there was good material for an equipment, expert help, and an efficient motor force, and all that was required was conveniently arranged at a point only 700 miles from the boreal center.

A house and workshop was built of packing boxes. The willing hands of this northernmost tribe of 250 people were set to the problem of devising a suitable outfit, and before the end of the long winter night we were ready for the enterprise.

Plans were matured to force a new route over Grinnell Land and northward along its west coast out on the polar sea.

Soon after the polar midnight the campaign opened. A few scouting parties were sent over to the American shores to explore a way and to seek game haunts.

Their mission was only partly successful, because storms darkened the January moon.

At sunrise of 1908 (February 19) the main expedition embarked for the pole. Eleven men and 103 dogs, drawing 11 heavily loaded sledges, left the Greenland shore and pushed westward over the troubled ice of Smith Sound.

The gloom of the long night was relieved by only a few hours of daylight. The chill of winter was felt at its worst.

As we crossed the heights of Ellesmere Sound to the Pacific slope the temperature sank to 83 degrees below zero Fahrenheit. Several dogs were frozen, and the men suffered severely, but we soon found game trails along which an easy way was forced through Nansen Sound to the land's end.

In this march were procured 101 musk oxen, 7 bears, and 335 hares, and then we pushed out into the polar sea from the southern point of Heiberg Island.

On March 17 six Eskimos returned from here, with four men and forty-six dogs, moving supplies for eighty days.

The crossing of the circumpolar pack was begun three days later. Two other Eskimos, forming the last supporting party, returned. The trains had now been reduced by the survival of the fittest. Etukishook and Ahwelah, the two best men, and twenty-six dogs were picked for the final dash. There was before us an unknown line of 460 miles to our goal.

The first days prevented long marches, and with encouraging progress the big lead which separated the land ice from the central pack was crossed with little delay.

Low temperature and persistent winds made life a torture, but, cooped in snow houses, eating dried beef and tallow and drinking hot tea, some animal comforts were occasionally to be gained.

For several days after the sight of known land was lost the overcast skies prevented an accurate determination of our positions.

On March 30 the horizon was partly cleared of its smoky agitation, and over the western mist was discovered a new land.

The observations gave our position latitude 84 deg. 17 min., longitude 86 deg. 36 min.

The urgent need of rapid advance on our main mission did not permit a detour to explore the coast.

Here were seen the last signs of solid earth. Beyond there was nothing stable, and even on scaling nothing was noted to mark the terrestial polar solidity.

We advanced steadily over the monotony of a moving sea of ice.

We now found ourselves beyond the range of all life. Neither the footprints of bears nor the blowholes of seals were detected. Even the microscopic creatures of the deep were no longer under us.

The maddening influence of the shifting desert of frost became almost unendurable in the daily routine. The surface of the pack offered less and less trouble. The weather improved, but still there remained a light life-sapping wind, which drove despair to its lowest recess.

Under the lash of duty, however, interest was forced, while the merciless drive of extreme cold enforced physical action.

Thus, day after day, the weary legs were spread over big distances.

The incidents and the positions were recorded, but the adventure was promptly forgotten in the mental bleach of the next day's effort.

The night of April 7 was made notable by the swing of the sun at midnight over the northern ice.

Sunburns and frost-bites were now recorded on the same day, but the double days of glitter infused quite an incentive into our life of shivers.

Observations on April 8 placed our camp at latitude 86 deg. 36 sec., longitude 94 deg. 2 sec.

In spite of what seemed like long marches, we had advanced but a little more than 100 miles in nine days.

Much of our hard work was lost in circuitous twists around troublesome pressure lines and high, irregular fields of very old ice.

The drift, too, was driving eastward with sufficient force to give some anxiety, though we were still equal to about fifteen miles daily.

The extended marches and the long hours of travel with which fortune had favored us earlier were no longer possible.

We were now about 200 miles from

the pole and the sled loads were reduced. One dog after another had gone into the stomachs of his hungry survivors until the teams were considerably reduced, but there seemed to remain a sufficient balance of man and brute to push along into the heart of the mystery to which we had set ourselves.

Beyond the eighty-sixth parallel the icefields became more extensive and heavier, the crevices fewer and less troublesome, with little or no crushed ice thrown up as barriers.

From the eighty-seventh to the eighty-eighth, much to our surprise, was the indication of land ice.

For two days we traveled over ice which resembled a glacial surface. The usual sea ice lines of demarkation were absent and there were no hummocks or deep crevices.

There was, however, no perceptible elevation and no positive sign of land or sea.

Observations on the 14th gave latitude 88 deg. 21 min. and longitude 95 deg. 52 min.

We were now less than one hundred miles from the pole.

The pack was here more active, but the temperature remained 40 below zero, cementing together quickly the new crevices.

Young ice spread on the narrow spaces of open water so rapidly that little delay was caused in crossing from one field to another.

The time had now arrived to muster energy for the last series of efforts.

In the enforced effort every human strand was strained, and at camping time there was no longer sufficient energy to erect a snow shelter, though the temperature was still very low.

The silk tent was pressed into service and the change proved agreeable. It encouraged a more careful scrutiny of the strange world into which fate had pressed us.

Signs of land were still seen every day, but they were deceptive illusions or a mere flight of fancy.

It seemed that something must cross the horizon to mark the important area into which we were pushing.

When the sun was low the eye ran over the moving plains of color to dancing horizons. The mirages turned things topsy turvy. Inverted mountains and queer objects ever rose and fell in shrouds of mystery, but all of this was due to the atmospheric magic of the midnight sun.

Slowly but surely we neared the turning point. Good astronomical observations were daily procured to fix the advancing stages.

The ice steadily improved, but still there was a depressing monotony of scene, and life had no pleasures, no spiritual recreation, nothing to relieve the steady physical drag of chronic fatigue.

But there came an end to this as to all things. On April 21 the first corrected altitude of the sun gave 89 deg. 59 min. 46 sec.

The pole, therefore, was in sight.

We advanced the fourteen seconds, made supplementary observations and prepared to stay long enough to permit a double round of observations.

Etukishook and Ahwelab were told that we had reached the "Neig Nail" and they sought to celebrate by an advance of savage joys.

At last we had pierced the boreal centre and the flag had been raised to the coveted breezes of the North Pole.

The day was April 21, 1908. The sun indicated local noon, but time was a negative problem, for here all meridians meet.

With a step it was possible to go from one part of the globe to the opposite side.

From the hour of midnight to that of midday the latitude was 90, the temperature 38 and the barometer 29.83.

North, east and west had vanished. It was south in every direction, but the compass pointing to the magnetic pole was as useful as ever.

Though overjoyed with the success of the conquest, our spirits began to descend on the following day. After all the observations had been taken with a careful study of the local conditions a sense of

intense loneliness came with the further scrutiny of the horizon.

What a cheerless spot to have aroused the ambition of man for so many ages!

An endless field of purple snows. No life. No land. No spot to relieve the monotony of frost. We were the only pulsating creatures in a dead world of ice.

We turned our backs to the pole on April 23 and began the long return march. Counting on a continued easterly drift, the course was forced further west.

With fair weather, good ice and the inspiration of the home run, long distances were at first quickly covered.

Below the eighty-seventh parallel the character of the ice changed very much, and it became evident that the season was advancing rapidly.

With a good deal of anxiety we watched the daily reduction of the food supply.

It now became evident that the crucial stage of the campaign was to be transferred from the taking of the pole to a final battle for life against famine and frost.

The clear blue of the skies changed to a steady, dismal gray. Several days of icy despair followed each other in rapid succession.

There were some violent gales, but usually the wind did not rise to the full force of a storm.

With starvation as the alternative, we could not wait for better weather.

Some advance was made nearly every day, but the cost of the desperate effort pressed life to the verge of extinction.

On May 24 the sky cleared long enough to give us a set of observations.

We had reached the eighty-fourth parallel near the ninety-seventh meridian. The ice was much broken and drifted eastward, leaving many open spaces of water.

There remained on our sleds scarcely enough food to reach our caches on Nansen Sound unless we averaged fifteen miles daily. With the disrupted "lalack" and reduced strength we were hardly equal to ten miles daily.

Trying to make the best of our hard lot, a straight course was set for the musk ox lands of the inner crossing.

At the eighty-third parallel we found ourselves to the west of a large tract, extending southward. The ice changed to small fields. The temperature rose to zero and a persistent mist obscured the heavens.

The events of the following day were pressed into desperate action.

With a few lines on paper to register the life of suffering, the food for man and dog was reduced to a three-quarter ration, while the difficulties of ice travel rose to disheartening heights.

At the end of a struggle of twenty days through thick fog the sky cleared and we found ourselves far down in Crown Prince Gustav Sea, with open water and impossible small ice as a barrier between us and Heiberg Island.

In the next few days bears came along as life savers. The empty stomachs were spread and the horizon, for a time, was cleared of trouble.

With the return to Annootok rendered difficult by the unfortunate westerly drift, we now sought to follow the ice movement south to Lancaster Sound, where we hoped to reach a Scottish whaler.

Early in July further southward progress became impossible, and in quest of food we crossed the Firth of Devon into Jones Sound.

The dogs were here given the freedom of their wolf propensities, and by folding boat and sled we tried to reach Baffin's Bay. With but an occasional bird to eat and a long line of misfortune we pushed eastward until the frost of early September stopped progress.

With neither food, fuel nor ammunition we were forced to wrest winter supplies from what seemed at first like a lifeless desert.

Pressed by hunger, new implements were shaped, and Cape Sparbo was picked as a likely place to find life.

Game was located with the bow and arrow, the line, the lance and the knife. The musk ox, bear and wolves yielded meat, skins and fat. An underground

den was prepared, and in it we remained until sunrise of 1909.

On February 18 the start was made for Annootok. With a newly prepared equipment the Greenland shores were reached on April 15.

Here we were greeted by Harry Whitney and an anxious group of Eskimo friends.

To facilitate an early return I moved southward to the Danish settlement and reached Upernavik on May 21, 1909.

First Report by Commander Robert E. Peary, U. S. N., September 6, 1909

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THE steamer *Roosevelt*, bearing the North Polar expedition of the Peary Arctic Club, parted company with the *Erik* and steamed out of Etah Fiord late in the afternoon of August 18, 1908, setting the usual course for Cape Sabine. The weather was dirty, with fresh southeasterly winds. We had on board twenty-two Eskimo men, seventeen women, and ten children, two hundred and twenty-six dogs, and some forty-odd walrus.

We encountered the ice a short distance from the mouth of the harbor, but it was not closely packed and was negotiated by the *Roosevelt* without serious difficulty. As we neared Cape Sabine the weather cleared somewhat, and we passed close by Three Voort Island and Cape Sabine, easily making out with the naked eye the house at Hayes Harbor occupied by me in the winter of 1901-'2.

From Cape Sabine north there was so much water that we thought of setting the lug sail before the southerly wind; but a little later appearance of ice to the northward stopped this. There was clean open water to Cape Albert, and from there scattered ice to a point about abreast of Victoria Head, thick weather and dense ice bringing us some ten or fifteen miles away.

From here we drifted south somewhat, and then got a slant to the northward out of the current. We worked a little further north, and stopped again for some hours. Then we again worked westward and northward till we reached a series of lakes, coming to a stop a few miles south of the *Windward's* winter quarters at Cape Derville.

From here, after some delay, we slowly worked away northeastward through fog and broken ice of medium thickness through one night and the forenoon of the next day, only emerging into open water and clear weather off Cape Fraser.

From this point we had a clear run through the middle of Robeson Channel, uninterrupted by either ice or fog, to Lady Franklin Bay. Here we encountered both ice and fog, and while working along in search of a practicable opening were forced across to the Greenland coast at Thank God Harbor. The fog lifted there, and enabled us to make out our whereabouts, and we steamed north through a series of leads past Cape Lupton, and thence southward toward Cape Union. A few miles off that cape we were stopped by impracticable ice, and we drifted back through to Cape Union, where we stopped again.

We lay for a time in a lake of water and then, to prevent being drifted south again we took refuge under the north shore of Lincoln Bay, in nearly the identical place where we had our unpleasant experiences three years before. Here we remained for several days during a period of constant and at times violent northeasterly winds.

Twice we were forced aground by the heavy ice; we had our port rail broken and a hole in the bulwark, and twice we pushed out in an attempt to get north,

but we were forced back each time to our precarious shelter.

Finally on September 11 we squeezed around Cape Union and made fast in a shallow niche in the ice, but after some hours we made another short run to Black Cape, and hung on to a grounded bit of ice. At last, a little after midnight of September 5, we passed through extremely heavy running ice into a stream of open water, rounded Cape Union, and passed Cape Sheridan.

Within a quarter of an hour of the same time we arrived three years before, 7 a. m., September 5, we reached the open water extending beyond Cape Sheridan. We steamed up to the end of it, and it appeared practicable at first to reach Porter Bay, near Cape Joseph Henry, which I had for my winter quarters. But the outlook being unsatisfactory, I went back and put the *Roosevelt* into the only opening in the floe, being barred close to the mouth of the Sheridan River, a little north of our position three years ago.

The season was further advanced than in 1905, there was more snow on the ground, and the new ice inside the floe bergs was much thicker.

The work of discharging the ship was commenced at once, and rushed to completion. The supplies and equipment we sledded across ice and sea and deposited on shore. A house and workshop were built of board, covered with sails, and fitted with stoves, and the ship was snug for winter in shoal water, where she touched bottom at low tide. This settlement on the stormy shores of the Arctic Ocean was christened Hubbardville.

A hunting party was sent out on September 10, and a bear was brought in on the 12th, and some deer a day or two later.

On September 15 the full work of transporting supplies to Cape Columbia was commenced. Marvin, with Doctor Goodsell and Borup and the Eskimo, took sixteen sledges of supplies to Cape Belknap, and on the 25th the same party started with loads to Porter Bay. The work of hunting and transporting supplies was prosecuted continuously by the members of the party and the Eskimos until November 5, when the supplies for the spring sledge trip had been removed from winter quarters and deposited at various places from Cape Colan to Cape Columbia.

In the latter part of September the movement of the ice subjected the ship to a pressure which listed her to port some 8 or 10 degrees, and she did not recover till the following spring.

On October 11 I went on a hunt with two Eskimos across the ice field and Parr Bay and the peninsula, made the circuit of Clements Markham Inlet, and returned to the ship in seven days with fifteen musk oxen, a bear, and a deer. Later in October I repeated the trip, obtaining five musk oxen, and hunting parties secured some forty deer.

Professor McMillan went to Columbia in November and obtained a month of tidal observations, returning in December. In the December moon Borup moved the Hecla depot to Cape Colan; Bartlett made a hunting trip overland to Lake Hazen, and Hensen went to Clements Markham Inlet. In the January moon Marvin crossed Robeson Channel and went to Cape Bryant for tidal and meteorological observations. Bartlett crossed the channel and made the circuit of Newman Bay and explored the peninsula. After he returned Goodsell went to Markham Inlet and Borup toward Lake Hazen, in the interior, on hunting trips.

In the February moon Bartlett went to Cape Hecla, Goodsell moved some more supplies from Hecla to Cape Colan, and Borup went to Markham Inlet on a hunting trip. On February 15 Bartlett left the *Roosevelt* with his division for Cape Columbia and Parr Bay; Goodsell, Borup, McMillan, and Hensen followed on successive days with their provisions. Marvin returned from Cape Bryant on February 17, and left for Cape Columbia February 21. I brought up in the rear February 22.

The total of all divisions leaving the *Roosevelt* were 7 members of the party,

59 Eskimos, 140 dogs, and 23 sledges. By February 27 such of the Cape Colan depot as was needed had been brought up to Cape Columbia, the dogs were rested and double-rationed and harnessed, and the sledges and other gear overhauled.

Four months of northerly winds during the fall and winter, instead of southerly ones, as during the previous season, led me to think that I would meet less water than before, but a great deal of rough ice, and I was prepared to hew a road through the jagged ice the first hundred miles or so, and then cross the big lead.

On the last day of February Bartlett, with his pioneer division, got away due north over the ice. On March 1 the remainder of the party got away on Bartlett's trail, and I followed an hour later.

The party now comprised 7 members of the expedition, 17 Eskimos, 133 dogs, and 19 sledges. One Eskimo and seven dogs had gone to pieces. A strong easterly wind, drifting snow, and temperature in the minus marked our departure from the camp at Cape Columbia, which I had christened Crane City.

Rough ice in the first march damaged several sledges and smashed two beyond repairs, the teams going to Columbia for other sledges in reserve there.

We camped ten miles from Crane City. The easterly wind and low temperature continued. On the 2d of March we passed the British record made by Markham, in May, 1876—82.20—and were stopped by open water, which had been formed by the wind after Bartlett passed. In this march we negotiated the lead, and reached Bartlett's third camp. Borup had gone back from here, but missed his way, owing to the faulting of the trail by the movement of the ice.

Marvin came back also for more fuel and alcohol. The wind continued, forming open water all about us. At the end of the fourth march we came upon Bartlett, who had been stopped by a wide lake of open water. We remained here from March 4 to March 11.

At noon of March 5, the sun, red and shaped like a football by excessed reflection, just raised itself above the horizon for a few minutes, and then disappeared again. It was the first time I had seen it since October 1.

I now began to feel a good deal of anxiety because there were no signs of Marvin and Borup, who should have been there for two days. Besides, they had the alcohol and oil which were indispensable for us. We concluded that they had either lost the trail or were imprisoned on an island by open water, probably the latter.

Fortunately, on March 11 the lead was practicable, and leaving a note for Marvin and Borup to push on after us by forced marches, we proceeded northward. The sounding of the lead gave 110 fathoms. During this march we crossed the 84th parallel, and traversed a succession of just frozen leads from a few hundred yards to a mile in width. This march was really simple.

On the 14th we got free of the leads and came on decent going. While we were making camp a courier from Marvin came, and informed me he was on the march in the rear. The temperature was 59 below zero.

The following morning, March 14, I sent Hensen with his division north to pioneer a trail for five marches, and Doctor Goodsell, according to the programme, started back to Cape Columbia. At night Marvin and Borup came spinning in with their men and dogs steaming in the bitter air like a squadron of battleships. Their arrival relieved me of all anxiety as to our oil supply.

In the morning I discovered that McMillan's foot was badly frost-bitten. The mishap had occurred two or three days before that, and McMillan had said nothing about it in the hope that it would come out all right. A glance at the injury showed me that the only thing was to send him back to Cape Columbia at once. The arrival of Marvin and Borup enabled me to spare sufficient men and dogs to go back with him.

This early loss of McMillan was seriously disappointing to me. He had a

sledge all the way from Cape Columbia, and with his enthusiasm and the powers and physique of the trained athlete I had confidence in him for at least the 86th parallel, but there was no alternative.

The best sledges and dogs were selected and the sledge loads brought up to the standard. The sounding gave a depth of 325 fathoms. We were over the continental shelf, and, as I had surmised, the successive leads crossed in the fifth and sixth marches composed the big lead and marked the continental shelf.

On leaving this camp the expedition comprised 16 men, 12 sledges, and 100 dogs. The next march was satisfactory as regards distance and character of going. In the latter part there were pronounced movements in the ice, both visible and audible. Some leads were crossed, in one of which Borup and his team took a bath, and we were finally stopped by an impracticable lead opening in front of us.

We camped in a temperature of 50. At the end of two short marches we came upon Hensen and his party in camp mending their sledges. We devoted the remainder of the day to overhauling and mending sledges and breaking up our damaged ones for material.

The next morning I put Marvin in the lead to pioneer the trail, with instructions to make two forced marches to bring up our average, which had been cut down by the last two short ones. Marvin carried out his instructions implicitly. A considerable amount of young ice assisted in this.

At the end of the 10th of March, in latitude 85.23, Borup turned back in command of the second supporting party, having traveled a distance equivalent to Nansen's distance from this far to his farthest north. I was sorry to lose this young Yale runner, with his enthusiasm and pluck. He had led his heavy sledge over the floes in a way that commanded every one's admiration, and would have made his father's eyes glisten.

From this point the expedition comprised 12 men, 10 sledges, and 70 dogs. It was necessary for Marvin to take a sledge from here, and I put Bartlett and his division in advance to pioneer the trail.

The continual daylight enabled me to make a moderation here that brought my advance and main parties closer together, and reduced the likelihood of their being separated by open leads.

Bartlett left camp with Henderson and their division; Marvin and I remained with our divisions twenty hours longer, and then followed. When we reached Bartlett's camp, he broke out and went on, and we turned in. By this arrangement the advance party was traveling while the main party was asleep, and *vice versa*, and I was in touch with my advance party every twenty-four hours.

I had no reason to complain of the going for the next two marches, though for a less experienced party, less adaptable sledges, or less perfect equipment it would have been an impossibility.

At our position at the end of the second march Marvin obtained a satisfactory sight for latitude in clear weather, which placed us at 85.48. This result agreed very satisfactorily with the dead reckoning of Marvin, Bartlett, and myself.

Up to this time the slight altitude of the sun had made it not worth while to waste time in observations.

On the next two marches the going improved, and we covered good distances. In one of these marches a lead delayed us a few hours. We finally ferried across on the ice cakes.

The next day Bartlett let himself out, evidently for a record, and reeled off plump twenty miles. Here Marvin obtained another satisfactory sight on latitude which gave the position as 86.38 (or beyond the farthest north of Nansen and Abruzzi), and showed that we had covered 50 minutes of latitude in three marches. In these three marches we had passed the Norwegian record of 86.14 by Nansen and the Italian record of 86.34 by Cagni.

From this point Marvin turned back in command of the third supporting

party. My last words to him were: "Be careful of the leads, my boy."

The party from this point comprised 9 men, 7 sledges, and 60 dogs. The conditions at this camp and the apparently unbroken expanse of fairly level ice in every direction reminded me of Cagni's description of his farthest north, but I was not deceived by the apparently favorable outlook, for favorable conditions never continue for any distance or any length of time in the Arctic regions.

The north march was very good going, but for the first time since leaving land we experienced that condition, frequent over these ice fields, of a hazy atmosphere in which the light is equal everywhere. All relief is destroyed, and it is impossible to see for any distance.

We were obliged in this march to make a detour around an open lead. In the next march we encountered the heaviest and deepest snow of the journey through a thick, smothering mantle lying in the depressions of heavy rubble ice. I came upon Bartlett and his party, fagged out and temporarily discouraged by the heart-racking work of making a road.

I knew what was the matter with them. They were simply spoiled by the good going on the previous marches. I rallied them a bit, lightened their sledges, and set them on encouraged again.

During the next march we traveled through a thick haze, drifting over the ice before a biting air from the northeast. At the end of the march we came upon the captain camped beside a wide-open lead, with a dense black water sky northwest, north, and northeast. We built our igloos and turned in, but before I had fallen asleep I was roused out by a movement of the ice, and found a startling condition of affairs.

A rapidly widening road of black water ran but a few feet from our igloos. One of my teams of dogs had escaped by only a few feet from being dragged by the movement in the ice into the water.

Another team had an equally narrow escape from being crushed by the ice blocks piled over them. The ice on the north side of the lead was moving around eastward. The small floes on which were the captain's igloos were drifting eastward in the open water, and the side of our igloos threatened to follow suit.

Kicking out the door of the igloos, I called to the captain's men to pack their sledges and be ready for a quick dash when a favorable change arrived.

We hurried our things on our sledges, hitched the dogs, and moved on to a large floe west of us. Then leaving one man to look out for the dogs and sledges, we hurried over to assist the captain's party to join us.

A corner of their raft impinged on the ice on our side for the rest of the night, and during the next day the ice suffered the torments of the damned, surging together, opening out, groaning and grinding, while the open water belched black smoke like a prairie fire. Then the motion ceased, the open water closed, the atmosphere to the north was cleared, and we rushed across before the ice should open again.

A succession of literally open leads were crossed, and after them some heavy old ice, and then we came to a layer of young ice, some of which buckled under our sledges, and this gave us a straight way of six miles to the north. Then came more heavy old floes covered with hard snow. This was a good, long march.

The next march was a long one. It was Bartlett's last hit. He let himself out over a series of large old floes, steadily increasing in diameter and covered with hard snow.

During the last few miles I walked beside him or in advance. He was very solemn and anxious to go further, but the programme was for him to go back from here in command of the fourth supporting party, and there were no supplies for an increase in the main party.

In this march we encountered a high wind for the first time since the three days after we left Cape Columbia. It was dead on our faces, bitter and insistent, but I had no reason to complain; it was better than an easterly or southerly wind, either of which would have set us

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ARCTIC HUNTERS AND ESKIMOS HAVING JUST LANDED THREE FINE SPECIMENS OF WALRUS

adrift in open water, while this was closing up every lead behind. This furnished another advantage of my supporting parties. True, by so doing, it was pressing to the south the ice over which we traveled, and so robbing us of a hundred miles of advantage.

We concluded we were on or near the 88th parallel, unless the north wind had lost us several miles. The wind blew all night, and all the following day. At this camp in the morning Bartlett started to walk five or six miles to the north, to make sure of reaching the 88th parallel. While he was gone I selected the forty best dogs in the outfit and had them doubled, and I picked out five of the best sledges and assigned them expressly to the captain's party. I broke up the tent for material with which to repair the others and set Eskimos at this work.

Bartlett returned in time to take a satisfactory observation for latitude in clear weather, and obtained for our position 87.48, that showed that the continued north wind had robbed us of a number of miles of hard-earned distance. Bartlett took the observation here, as had Marvin five camps back, partly to save my eyes, but largely to give an independent record and determination of our advance. The observations completed, and two copies made, one for him and the other for me, Bartlett started on the back trail in command of my fourth supporting party, with 2 Eskimos, 1 sledge, and 18 dogs.

When he left I felt for a moment the pangs of regret as he disappeared in the distance, but it was only momentary. My work was still ahead, not in the rear. Bartlett had done good work, and had been a great help to me. Circumstances had thrust the brunt of pioneering upon him instead of dividing it among several, as I had planned.

He had reason to take pride in the fact that he had bettered the Italian record by a degree and a quarter, and had covered a distance equal to the entire distance of the Italian expedition from Franz Josef's Land to Cagni's farthest north. I had

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SCENE ON SOUTH GREENLAND COAST, SHOWING THE ODD WAY THE ESKIMO WOMEN IN THIS LOCALITY DRESS THE HAIR

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AN ARCTIC EXPLORER COMING OUT OF A SNOW COVERED IGLOO: A WINTER HOME IN THE ARCTICS

given Bartlett this position and post of honor in command of my fourth and last supporting party, and for two reasons: First, because of his magnificent handling of the *Roosevelt;* second, because he had cheerfully stood between me and many trifling annoyances on the expedition.

Then there was a third reason. It seemed to me appropriate, in view of the magnificent British record of Arctic work covering three centuries, that it should be a British subject who could boast that next to an American he had been nearest the pole.

With the disappearance of Bartlett, I turned to the problem before me. This was that for which I had worked for thirty-two years; for which I had lived the simple life; for which I had conserved all my energy on the upward trip; for which I had trained myself as for a race, crushing down every worry about success.

For success now, in spite of my years, I felt in trim—fit for the demands of the coming days and eager to be on the trail. As for my party, my equipment and my supplies, I was in shape beyond my most sanguine dreams of earliest years. My party might be regarded as an ideal which had now come to realization—as loyal and responsive to my will as the fingers of my right hand.

Four of them carried the technique of dogs, sledges, ice, and cold as their heritage. Two of them, Hensen and Ootam, were my companions to the

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ESKIMOS ON THE ICE IN NORTH STAR BAY

farthest point three years before. Two others, Egingwah and Sigloo, were in Clark's division, which had such a narrow escape at that time, and now were willing to go anywhere with my immediate party, and willing to risk themselves again in any supporting party.

The fifth was a young man who had never served before in any expedition, but who was, if possible, even more willing and eager than the others for the princely gifts—a boat, a rifle, a shotgun, ammunition, knives, etc.—which I had promised to each of them who reached the pole with me; for he knew that these riches would enable him to wrest from a stubborn father the girl whose image filled his hot young heart.

All had blind confidence so long as I was with them and gave no thought for the morrow, sure that whatever happened I should somehow get them back to land. But I dealt with the party equally. I recognized that all its impetus centered in me and that, whatever pace I set, it would make good. If any one was played out, I would stop for a short time.

I had no fault to find with the conditions. My dogs were the very best, the pick of 122 with which we left Columbia. Almost all were powerful males, hard as nails, in good flesh, but without a superfluous ounce, without a suspicion of fat anywhere; and, what was better yet, they were all in good spirits.

My sledges, now that the repairs were completed, were in good condition. My supplies were ample for forty days, and with the reserve, represented by the dogs themselves, could be made to last fifty.

Pacing back and forth in the lee of the pressure ridge where our igloos were built, while my men got their loads ready for the next marches, I settled on my

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TWO POLAR BEARS HARPOONED BY ESKIMOS AND BROUGHT ABOARD AT BLACK LEAD, EAST GREENLAND

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SCENE AT ETAH, THE MOST NORTHERLY ESKIMO SETTLEMENT, SHOWING METHOD OF DRYING MEAT, OUT OF THE REACH OF DOGS AND POLAR BEARS

programme. I decided that I should strain every nerve to make five marches of twenty-five miles each, crowding these marches in such a way as to bring up to the end of the fifth long enough before noon to permit the immediate taking of an observation for latitude.

Weather and leads permitting, I believed I could do this. If my proposed distances were cut down by any chance, I had two means in reserve for making up the deficit.

First. To make the last march a forced one, stopping to make tea and rest the dogs, but not to sleep.

Second. At the end of the fifth march

to make a forced march with a light sledge, a double team of dogs, and one or two of the party, leaving the rest in camp.

Underlying all these calculations was a recognition of the ever-present neighborhood of open leads and impassable water, and the knowledge that a twenty-four hour gale would knock all my plans into a cocked hat, and even put us in imminent peril.

At a little after midnight of April 1, after a few hours of sound sleep, I hit the trail, leaving the others to break up camp and follow. As I climbed the pressure ridge back of our igloos, I set another hole in my belt, the third since I started. Every man and dog of us was lean and flat-bellied as a board, and as hard.

It was a fine morning. The wind of the last two days had subsided, and the going was the best and most equable of any I had yet. The floes were large and old, hard and clear, and were surrounded by pressure ridges, some of which were almost stupendous. The biggest of them, however, were easily negotiated, either through some crevice or up some huge brink.

I set a good pace for about ten hours. Twenty-five miles took me well beyond the 88th parallel. While I was building my igloos a long lead formed by the east and southeast of us at a distance of a few miles.

A few hours' sleep and we were on the trail again. As the going was now practically horizontal, we were unhampered and could travel as long as we pleased and sleep as little as we wished. The weather was fine and the going like that of the previous day, except at the beginning, when pickaxes were required. This and a brief stop at another lead cut down our distance. But we had made twenty miles in ten hours and were half way to the 89th parallel.

The ice was grinding audibly in every direction, but no motion was visible. Evidently it was settling back in equilibrium and probably sagging due northward with its release from the wind pressure.

Again there was a few hours' sleep, and we hit the trail before midnight. The weather and going were even better. The surface, except as interrupted by infrequent ridges, was as level as the glacial fringe from Hecla to Columbia and harder.

We marched something over ten hours, the dogs being often on the trot and made 20 miles. Near the end of the march, we rushed across a lead 100 yards wide, which buckled under our sledges, and finally broke as the last sledge left it.

We stopped in sight of the 89th parallel, in a temperature of 40 degrees below. Again a scant sleep, and we were on our way once more and across the 89th parallel.

This march duplicated the previous one as to weather and going. The last few hours it was on young ice, and occasionally the dogs were galloping. We made 25 miles or more, the air, the sky, and the bitter wind burning the face till it cracked. It was like the great interior ice cap of Greenland. Even the natives complained of the bitter air. It was as keen as frozen steel.

A little longer sleep than the previous ones had to be taken here as we were all in need of it. Then on again.

Up to this time, with each successive march, our fears of an impossible lead had increased. At every inequality of the ice, I found myself hurrying breathlessly forward, fearing that it marked a lead, and when I arrived at the summit would catch my breath with relief—only to find myself hurrying on in the same way at the next one. But on this march, by some strange shift and feeling, this fear fell from me completely. The weather was thick, but it gave me no uneasiness.

Before I turned in I took an observation, which indicated our position as 89.25. A dense, lifeless pall hung overhead. The horizon was black and the ice beneath was a ghastly, shelly-white, with no relief—a striking contrast to the glimmering, sunlit fields of it over which we had been traveling for the previous four days.

The going was even better and there was scarcely any snow on the hard, granular, last summer's surface of the old floes dotted with the sapphire ice of the previous summer's lakes.

A rise in temperature to 15 below reduced the friction of the sledges and gave the dogs the appearance of having caught the spirit of the party. The more sprightly ones, as they went along with tightly-curled tails, frequently tossed their heads, with short, sharp barks and yelps.

In twelve hours we made 40 miles. There was not a sign of a lead in the march.

I had now made my five marches, and was in time for a hasty noon observation through a temporary break in the clouds, which indicated our position as 89.57. I quote an entry from my journal some hours later:

"The pole at last! The prize of three centuries. My dream and goal for twenty years! Mine at last! I cannot bring myself to realize it. It all seems so simple and commonplace. As Bartlett said when turning back, when speaking of his being in these exclusive regions which no mortal has ever penetrated before, 'It's just like every day.'"

Of course I had my sensations that made sleep impossible for hours, despite my utter fatigue—the sensations of a lifetime; but I have no room for them here.

The first thirty hours at the pole were spent in taking observations; in going some ten miles beyond our camp, and some eight miles to the right of it; in taking photographs, planting my flags, depositing my records, studying the horizon with my telescope for possible land, and searching for a practicable place to make a sounding.

Ten hours after our arrival, the clouds cleared before a slight breeze from our left, and from that time until our departure in the afternoon of April 7, the weather was cloudless and flawless. The minimum temperature during the thirty hours was 33 below, the maximum 12.

We had reached the goal, but the return was still before us. It was essential that we reach the land before the next spring tide, and we must strain every nerve to do this.

I had a brief talk with my men. From now on, it was to be a big travel, little sleep, and a hustle every minute. We would try, I told them, to double march on the return—that is, to start and cover one of our northward marches, make tea and eat our luncheon in the igloos, then cover another march, eat and sleep a few hours, and repeat this daily.

As a matter of fact, we nearly did this, covering regularly on our return journey five outward marches in three return marches. Just as long as we could hold the trail we could double our speed, and we need waste no time in building new igloos.

Every day that we gained on the return lessened the chances of a gale destroying the track. Just above the 87th parallel was a region fifty miles wide, which caused me considerable uneasiness. Twelve hours of strong easterly, westerly or northerly wind would make this region an open sea.

In the afternoon of the 7th we started on our return, having double-fed the dogs, repaired the sledges for the last time, and discarded all our spare clothing to lighten the loads.

Five miles from the pole a narrow crack filled with recent ice, through which we were able to work a hole with a pick-axe, enabled me to make a sounding. All my wire, 1,500 fathoms, was sent down, but there was no bottom. In pulling up the wire parted a few fathoms from the surface, and lead and wire went to the bottom. Off went the reel and handle, lightening the sledges still further. We had no more use for them now.

Three marches brought us back to the igloos where the Captain turned back. The last march was in the wild sweep of a northerly gale, with drifting snow and the ice rocking under us as we dashed over it.

South of where Marvin had turned back we came to where his party had built several igloos while delayed by open

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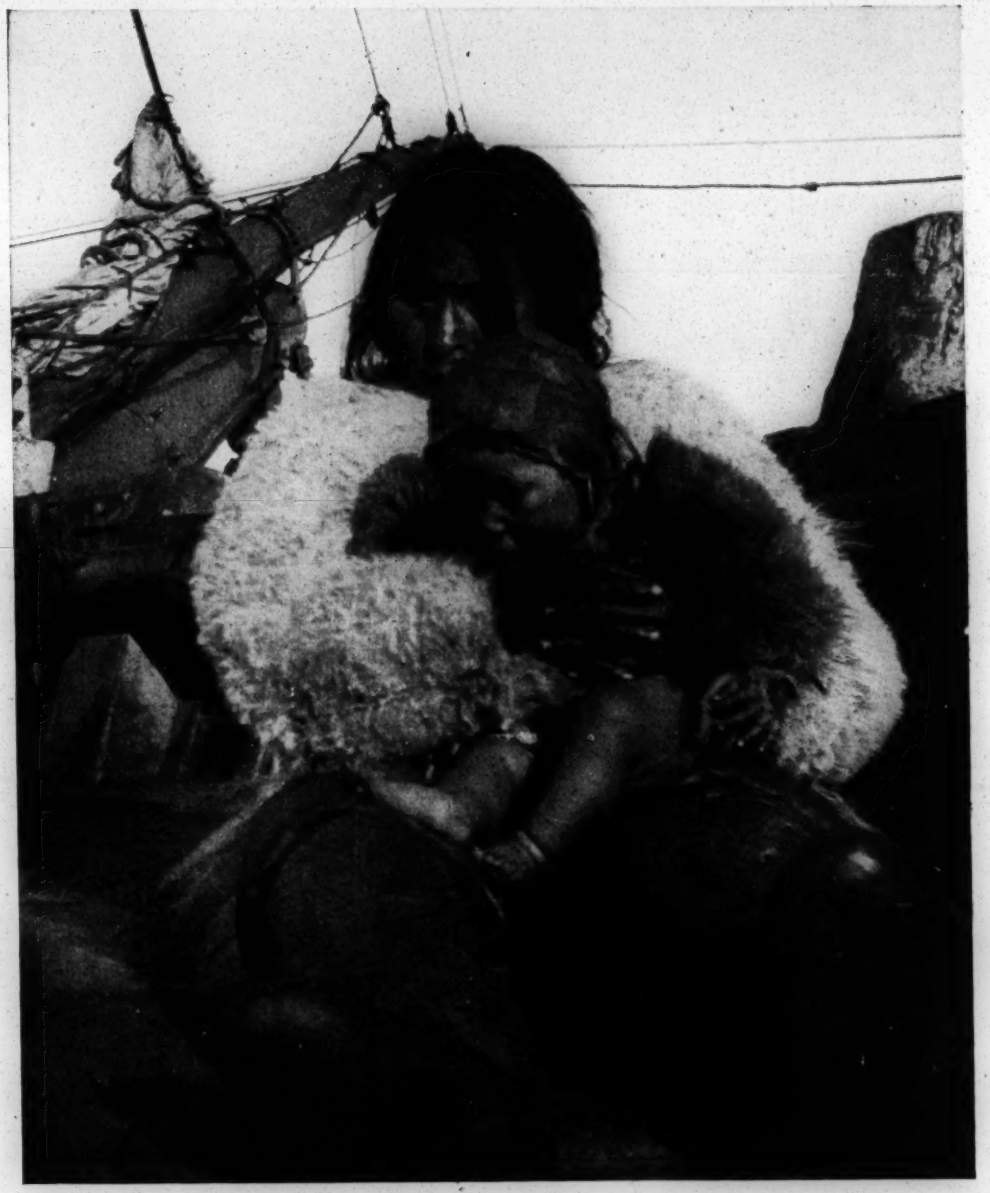
AN ESKIMO, HIS WIFE, SONS, AND DAUGHTERS

leads. Still further south we found where the Captain had been held up by an open lead and obliged to camp. Fortunately, the movement of these leads was simply open and shut, and it took considerable water motion to fault the trail seriously.

While the Captain and Marvin, as was found out later, and Borup had been delayed by open leads, we seemed to bear a patent charm and at no single lead were we delayed more than a couple of hours. Sometimes the ice was fast and firm enough to carry us across; sometimes a short detour, sometimes a brief halt for the lead to close, sometimes an improvised ferry on an ice-cake, kept the trail without difficulty down to the tenth outward march.

Igloos there disappeared completely,



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AN ESKIMO MOTHER AND BABE

and the entire region was unrecognizable. Where on the outward journey had been narrow cracks, there were now broad leads, one of them over five miles in width, caught over with young ice.

Here again fortune favored us, and no pronounced movement of the ice having taken place since the Captain passed we had his trail to follow. We picked up the old trail again north of the seventh igloos, followed it beyond the fifth, and at the big lead lost it finally.

From here we followed the Captain's trail, and on April 23 our sledges passed up the vertical edge of the glacier fringe, a little west of Cape Columbia. When the last sledge came up I thought my Eskimos had gone crazy. They yelled and called and danced themselves helpless. As Ooath sat down on his sledge he remarked in Eskimo:

"The Devil is asleep or having trouble with his wife, or we never should have come back so easily."

A few hours later we arrived at Crane City under the bluffs of Cape Columbia, and after putting four pounds of pemmican into each of the faithful dogs to keep them quit, we had at last our chance to sleep. Never shall I forget that sleep at Cape Columbia. It was sleep, sleep, then turn over and sleep again. We slept gloriously, with never a thought of the morrow or of having to walk, and, too, with no thought that there was to be never a night more of blinding headache. Cold water to a parched throat is nothing compared with sleep to a numbed, fatigued brain and body.

Two days we spent here in sleeping and drying our clothes; then for the ship. Our dogs, like ourselves, had not been hungry when we arrived, but simply lifeless with fatigue. They were different animals, and the better ones among them stept on with tightly curled tails, uplifted heads, and their hind legs treading the snow with piston-like regularity. We reached Hecla in one march, and the *Roosevelt* in another.

When we got to the *Roosevelt,* I was staggered by the news of the fatal mishap to Marvin. He had either been less cautious or less fortunate than the rest of us, and his death emphasized the risk to which we had all been subjected, for there was not one of us but had been in the sledge during some time in the journey.

The big lead, cheated of its prey three years before, had at last gained its human victim.

The rest can be quickly told. McMillan and Borup had started for the Greenland coast to deposit caches for me. Before I arrived a flying Eskimo courier from me overtook them with instructions that the caches were no longer needed, and that they were to concentrate their energies on tidal observations, etc., at Cape Morris Jesup, and north from there.

These instructions were carried out, and after their return in latter part of May, McMillan made some further tidal observations at other points. The supplies remaining at the various caches were brought in, and on July 18 the *Roosevelt* left her winter quarters and was driven out into the channel pack of Cape Nion.

She fought her way south in the center of the channel, and passed Cape Sabine on August 8, or thirty-nine days earlier than in 1908, and thirty-two days earlier than the British expedition in 1876.

We picked up Whitney and his party and the stores at Etah. We killed 70 odd walrus for my Eskimos, whom I landed at their homes. We met the *Jeanie* off Saunders Island and took over her coal, and cleared from Cape York on August 26, one month earlier than in 1906.

On September 5 we arrived at Indian Harbor, whence the message, "Stars and Stripes nailed to North Pole," was sent vibrating southward through the crisp Labrador air.

The culmination of long experience, a thorough knowledge of the conditions of the problem, gained in the last expedition—these together with new sledges, which reduced the work of both dogs and driver, and a new type of camp cooker, which added to the comfort and increased the hours of sleep of the men's party, combined to make the present expedition an agreeable improvement on the last in respect to the rapidity and effectiveness of its work, and the lessened discomfort and strain upon the members of the party.

As to the personnel, I have again been particularly fortunate. Captain Bartlett is just Bartlett—tireless, sleepless, enthusiastic, whether on the bridge, or in

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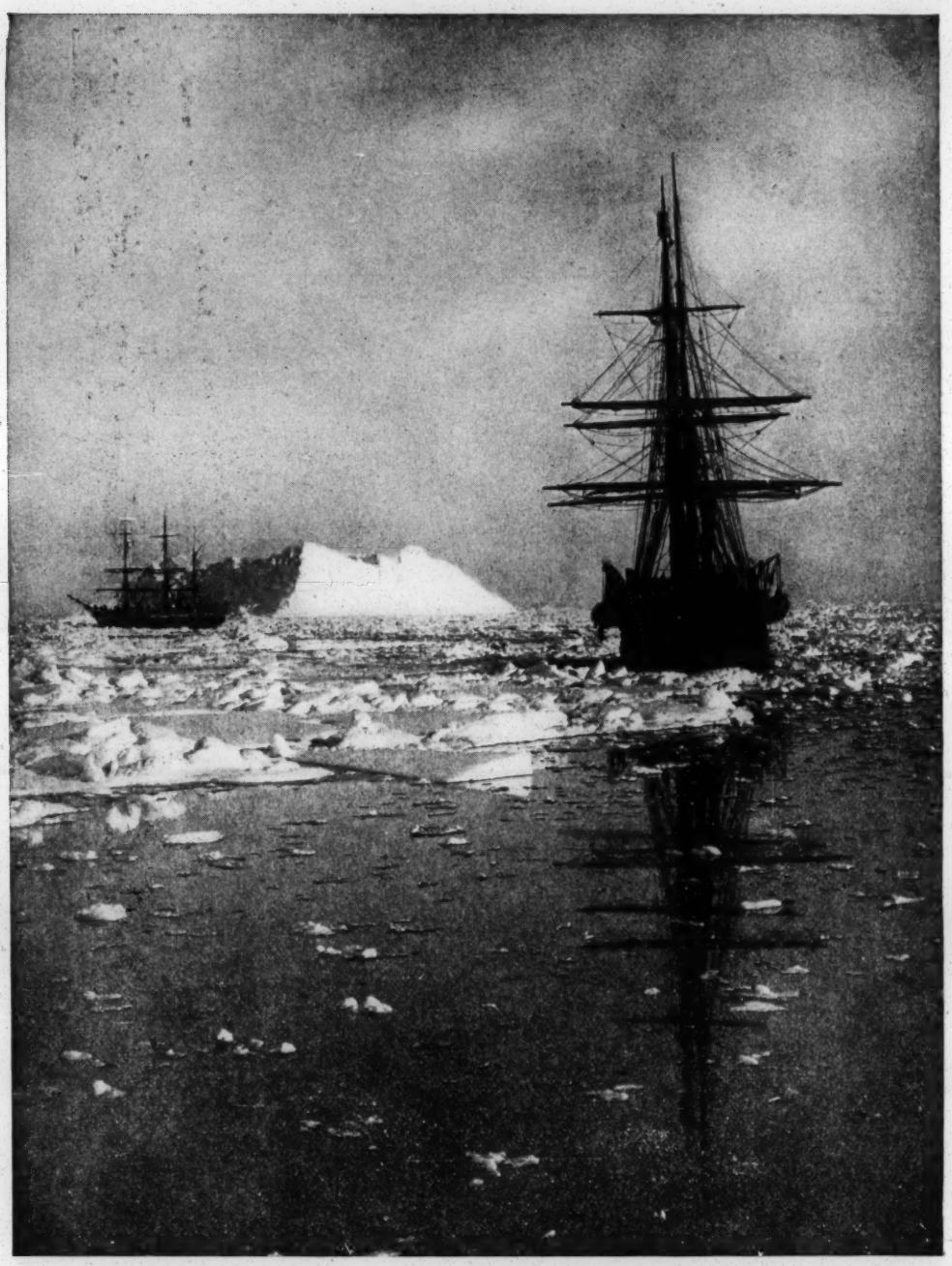
CHILDREN OF THE TOP OF THE WORLD



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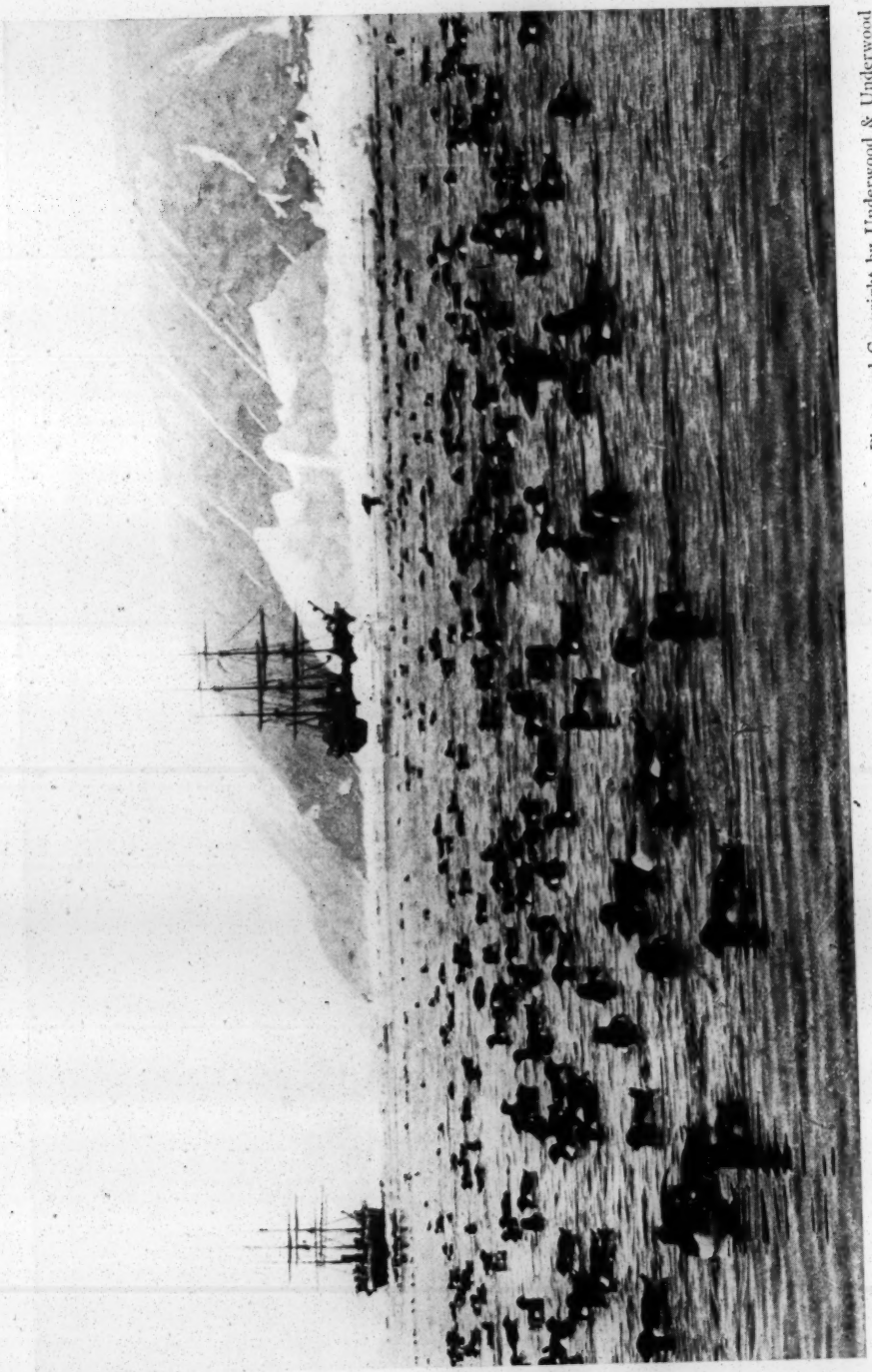
A STRIKING SCENE IN THE ARCTIC REGIONS: EXPLORERS' SHIPS, ICE BERGS, AND ICE FLOATS: VERY GOOD WHALE FISHING IS TO BE FOUND HERE, BAFFIN BAY



SCENE ON THE GREENLAND COAST Photo and Copyright by Underwood & Underwood

the crow's nest, or at the head of a sledge division in the field.

Dr Goodsell, the surgeon of the expedition, not only looked after its health and his own specialty of microscopes, but took his full share of the field work of the expedition as well, and was always ready for any work.

Profs. Marvin and McMillan have secured a mass of scientific data, having made all the tidal and most of the field work, and their services were invaluable in every way.

Borup not only made the record as to the distance traveled during the journey, but to his assistance and expert knowledge of photography is due what I believe to be the unequalled series of photographs taken by the expedition.

Henson in the field and Percy as steward, were the same as ever, invaluable in their respective lines. Chief Engineer Wardwell, also of the last expedition, aided by his assistant, Scott, kept the machinery up to a high state of efficiency and has given the *Roosevelt* the force and power which enabled her to negotiate apparently impracticable ice.

Mr Gushue, the mate, who was in charge of the *Roosevelt* during the absence of Captain Bartlett and myself, and Boatswain Murphy, who was put in charge of the station at Etah for the relief of Cook, were both trustworthy and reliable men, and I count myself fortunate in having had them in my service.

The members of the crew and the firemen were a distinct improvement over those of the last expedition. Every one of them was willing and anxious to be of service in every possible way. Connors, who was promoted to be boatswain in the absence of Murphy, proved to be particularly effective. Barnes, seaman, and Wiseman and Joyce, firemen, not only assisted Marvin and McMillan in their tidal meteorological observations on the *Roosevelt*, but Wiseman and Barnes went into the field with them on their trips to Cape Columbia, and Condon and Cody covered 1,000 miles hunting and sledging supplies.

As for my faithful Eskimos, I have left them with ample supplies of dark, rich walrus meat and blubber for their winter, with currants, sugar, biscuits, guns, rifles, ammunition, knives, hatchets, traps, etc., and for the splendid four who stood beside me at the pole a boat and tent each to requite them for their energy, and the hardships and toil they underwent to help their friend Peary to the North Pole.

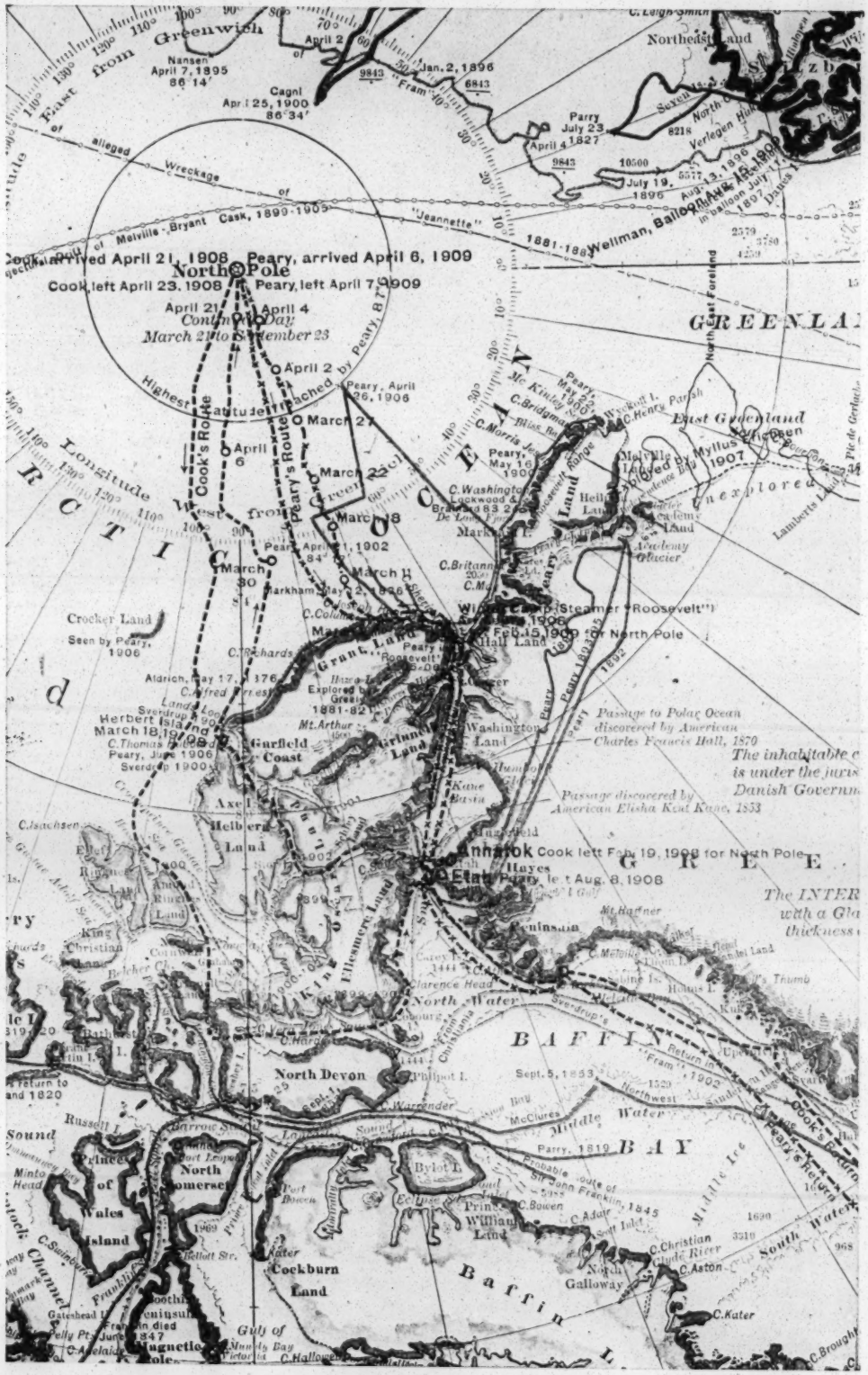
But all of this—the dearly bought years of experience, the magnificent strength of the *Roosevelt*, the splendid energy and enthusiasm of my party, the loyal faithfulness of my Eskimos—would have gone for naught but for the faithful necessaries of war furnished so loyally by the members of the Peary Arctic Club. And it is no detraction from the living to say that to no single individual has the fine result been more signally due than to my friend the late Morris K. Jesup, the first President of the Club.

Their assistance has enabled me to tell the last of the great earth stories, the story the world has been waiting to hear for 300 years—the story of the discovery of the North Pole.

NORTH POLAR MAP

READERS of this Magazine interested in Polar exploration are reminded of the map of the Arctic regions compiled by Gilbert H. Grosvenor and published as a supplement to our July, 1907, Arctic number. The map shows the routes of the principal North Polar explorers, and gives much historical as well as geographical information. The map is 24 x 24 inches, and in nine colors, the color of the land showing the nationality of the pioneer explorer. Copies of the map may be obtained from the National Geographic Society at 25 cents each; backed with linen, 50 cents.

To Dr Theodore Le Boutillier, Secretary of the Geographical Society of Philadelphia, the NATIONAL GEOGRAPHIC MAGAZINE is indebted for the interesting views of Greenland printed on pages 877 to 891 of this number. The illustrations are from a collection of photographs made by Dr Le Boutillier during several months spent in the Arctic regions some years ago as a member of one of Commander Peary's expeditions.



MAP OF NORTH POLAR REGIONS

FISHING AND HUNTING TALES FROM BRAZIL

By Dewey Austin Cobb

BRAZIL is certainly the lazy fisherman's paradise. In common with many readers and travelers, I had heard a great deal about a way the natives of tropical America have of catching fish with poison which does not unfit them for food. It is one of the things that they do not explain to strangers, however, perhaps because it is forbidden by law to use this method in the streams, and partly because the Tupuya Indians, among whom it is chiefly practiced, seldom tell white folks anything useful if they can help it; consequently it was only after two years' residence among this secretive people that I was reluctantly taken into their confidence sufficiently to be permitted to join them on one of their fishing excursions.

Just as we were sitting down to dinner one day, a party of Indians, men, women, and children, straggled up to the house, every one carrying a bag or basket, in which some part of a week's outfit for camping in the woods was contained. They had walked out that morning from Santarem, seven miles distant, and were going to spend a week in fishing on the stream which operated my friends' sawmill. Every caller expects and gets a lunch among these people, and my host fed them according to custom.

After some hesitation they consented to let me join them. We followed the stream for half a mile or so, to where it spread out into a pool, perhaps fifty feet across; there they hung their hammocks and built a fire. The men then divided into two parties, one going up and the other down the stream a few rods, then, stripping to the skin, entered the stream, and, thrashing the water with their feet and with sticks, returned to the pool driving all the fish before them to the pool. One man remained at the outlet and one at the inlet, while the others dressed and climbed out.

Meantime one of the women had taken from one of their bags the dried tongue of a pira-rucu (red fish), which serves almost universally as the family grater for both whites and Indians, being thickly covered with minute, horny spines, turned backward to enable the fish to hold its prey. From another bag she produced the mysterious "barbasco" roots, which resembled rather stocky horseradish roots, and grated them into about two quarts of water.

This mixture was thrown by dipperfuls into the pool at various points; then we all sat down to await results. In about two minutes we began to see minute fish come to the surface, belly up, remain a few seconds, then with a flirt disappear, to return again a moment later and remain longer. At the end of ten minutes all the small fry in the pond were on the surface, apparently dead, while larger and larger ones began to go through the same performance.

After watching this fantastic performance for twenty minutes or so our leader rigged a long-handled scoop-net, and fishing began. By this time fish from eight to twelve inches long remained on the surface long enough to be easily captured with the net and were put in a bushel basket, which was nearly filled in half an hour. There were half a dozen varieties, but the greater part were a species of catfish. A few resembled bass, but were much lighter in color. Most of them were entirely new to northern eyes.

After some of them were broiled, the man who seemed to direct operations, noticing that I did not join in the feast and surmising the reason, took several spoonfuls of the poisoned water and, mixing it with a dipperful of water, drank it down. It had not the slightest effect upon him, and, fully reassured, I ate the fish heartily with the rest, and never did I enjoy broiled fish more.

When our feast was finished I strolled down the stream to see how the fish were affected below the pool. Many of the very smallest of them floated by, apparently dead, and I was told that they would not recover, but make food for the larger ones, who were not affected by eating them. To all appearance they were affected only through their respiratory organs, and experience no lasting injury. With the exception of an occasional flash of white belly, which disappeared as quickly as it came in sight, the larger fish, such as we had taken out, when they had reached the diluted poison of the stream below, were not at all affected.

After we all, men, women, and children, had smoked one of their cigarettes, rolled in pungent cascara bark instead of paper, I went home alone, less mystified by the barbasco fishing than by the inherited capacity of this ancient race, to enjoy a whole week, with nothing to think about, and nothing to do, but eat, sleep, and smoke.

HOW THE UNTUTORED SAVAGES KEPT A TRIBE-SECRET 400 YEARS

"Urari (or Curari) is the most powerful sedative in nature; tipped with it, the needle-like arrows used by the Indians of the upper Amazon, in their blow-guns, will kill an ox in twenty minutes and a monkey in ten."

This is substantially the statement made by Prof. James Orton, A. M., in his volume "The Andes and the Amazons." The fact that the secret of compounding this unique poison has been kept so long from its numberless seekers is perhaps the strangest thing about it.

The first mention of it made to the civilized world was by Orellana in his account of his descent of the "Great River" when he deserted, with a portion of the men, from the conquering army of Francisco Pizarro and sailed down to the Atlantic Ocean in 1539. He wrote that his company was "fired upon by the hostile Indians with minute, poisoned arrows." This is the same trip when he reported that he was attacked by a band of savage female warriors with bows and arrows. His report of the poisoned arrows has been verified by later travelers, although the "female warriors," from whom the mighty river derived its name, proved to be a shiftless tribe of savages, too lazy to make other garments, who wore in the place of clothes a sheet of thin bark with a hole in the middle to slip over the head, after which it was belted at the waist, and was easily mistaken for a woman's dress. The same costume is still worn by them.

The great traveler and naturalist, Baron Von Humboldt, in 1803, was the first to bring to Europe a sufficient quantity of the poison for analysis. It was found to contain a hitherto unknown alkaloid, which was named *curarine*.

Urari is prepared by only a few tribes of savages on the upper waters of the Amazon and Orinoco rivers, where it is almost the only article made for sale. It is sold mostly to other tribes, who use it for killing birds whose plumage has been in great demand in late years among the river traders.

The price of urari, where it is made, is quite uniformly its weight in silver. In Quito, where considerable is marketed, a one-half gill cup of it costs $1.50.

The gun in which these poisoned arrows are used consists of a straight bamboo tube, from five to six feet long, with a sight on one end and a funnel-shaped expansion to fit the mouth at the other. The principle is precisely the same as a schoolboy's tube for blowing putty-balls, but the bore is so large, about one-half inch, that it requires more breath than untrained lungs can supply to make it effective. Even the most expert can shoot only a short distance, as compared with firearms, but their accuracy is wonderful when one considers the difficulty of sighting a tube from the position in which it is held.

The arrows consist of a point of wood or bone, not more than an inch long, and the size of a toothpick, to which is attached a little tuft of the airy fiber of the silk cotton tree, which is as light as thistle-down, and will not "pack" like

cotton fiber, and so lose the necessary symmetry of form to insure accuracy. The point is then dipped in a thick solution of the poison, dried, and is ready for use.

These arrows have not the geometrical trajectory of the bullet or common arrow. Owing to their lightness they travel in an almost horizontal line until the air's resistance stops them, when they drop almost straight to the ground.

Ever since the unique qualities of urari became known, great interest has been taken and many efforts made to learn the secret of compounding it. Humboldt learned that one plant was always an important ingredient; this is the vine, *Strychnos toxifera,* which, however, contains no trace of strychnine, but is very poisonous. It must be used in combination with other plants to produce the characteristic effects of urari.

In 1872 one additional ingredient was learned by Prof. Orton, who wrote, "Tobacco and the milk of another plant is added, coagulating it." Without this "milk of another plant," it is not the preëminent sedative which the medical world seeks—one which produces death, indistinguishable from sleep, in its approach.

A few weeks before my return home from Brazil, a gentleman left the steamer on its downward trip and came for two weeks' rest to the plantation where I was visiting, before taking the sea voyage home. He was a professor in a German university, he told us, and had spent two years 1,000 miles further up the Amazon, among the Ticuna Indians, and was now on his way back. He was thin and sallow, and seemed to need rest. A few days before his departure I questioned him about the purpose of such an unusual proceeding, and he related the following experience:

"The medical faculty of our university has been experimenting for several years with urari, and believed they were on the eve of finding a way of using the tremendous potentiality of this unique poison to good account in treating some nervous diseases when our supply became exhausted.

"After thoroughly satisfying ourselves that some vital element was unknown to the travelers who believed they had learned the secret, and had given us their preparations to test, the university decided to send a botanist, who was also a physician, among the Indians who had made our best samples, and who was to remain long enough to secure their carefully guarded secret. I was the one chosen and equipped for this service, and started immediately.

"It was six months before I could get to work. I had to find a village where they made it, learn a little of their inhuman language, and win their confidence enough to be received among them without exciting their suspicions of my object in coming, for their secret had often been sought by visitors, and they were very suspicious.

"When one day it was announced that urari was to be made, I joined one of the parties sent out to gather the vine, *Strychnos toxifera,* which I already knew, having seen it in some European botanical gardens, cultivated as a curiosity. This was cut in suitable lengths and thrown into a kettle of water, which was kept boiling three days, adding more, and throwing away the old, after it had cooked six hours.

"The third night, when the vine had all been used, the refuse was thrown away, and some hoodoo ceremonies and incantations were performed by the leaders, as they marched around the kettle.

"I think I should say here that from first to last three old men directed everything, and I believe that other members of the tribe knew as little about making urari as I did. They seemed, however, to be greatly impressed by the ceremonies.

"The next day only six people were sent to the woods, each to gather some one plant. I had no trouble in identifying all these before they were put into the kettle of boiling water, left after the vines had been thrown away, and I was encouraged.

"The following day nearly the whole tribe went out in small parties for the final gathering. When they came in at midday, each brought a bundle of plants

containing many varieties, which were thrown down in a pile beside the kettle. It would have taken the best botanist a week to identify them all, even if there had not been some of them that were unknown and unnamed by botanists.

"That evening a short ceremony was performed, in which the great medicine spirit was asked to show them which of these were to be used. Then all three began to pick them up, one by one. Nearly all were thrown away, and the few chosen were hastily tossed into the pot, and lost sight of in the cloud of evil-smelling steam that rose above it. So many kinds of leaves of tropical plants exude a "white, milky sap" that I saw at once that I was defeated in my quest, at least in that settlement.

"However, I went down the river to another village where urari was made, but only stayed long enough to learn that similar tactics were used for guarding the secret.

"I realized that I was beaten. My health had suffered by exposure and unaccustomed food, and I started home, after buying, for its weight in silver, all the poison that they had ready for market."

A short time previous to the arrival of the professor an Indian had drifted down the river in search of work. He had brought with him a blow-gun and some arrows, not yet poisoned, which he had sold to me as curiosities. He had had some experience in using the gun, but did not claim to be skillful in its use. At my request the professor consented to dip some of my arrows in urari, as he had seen the Indians do it, and next morning at daylight go to a distant cornfield, where deer came at night to feed and paw in the soft earth, leaving it at or before sunrise.

Next morning at dawn we were carefully hidden on the leeward side of the field, to prevent their getting "our wind," in one of the little arched openings where all wild creatures pass the hedge-like border of the clearing. Here we lay flat on the ground so that we could see into the growing corn.

Our presence was evidently unsuspected, for we had waited but a few minutes when we heard some creature rustling the corn leaves. A moment later a good-sized buck walked leisurely out of the corn and stopped and partly turned to look back, just as it reached the mouth of our "tunnel," thus exposing to us its full broadside as we lay some thirty feet away.

After a deliberate aim our hunter fired, if I may use such a word for the little puff, scarcely heard by us, and entirely inaudible above the rustling corn leaves at the distance of the deer.

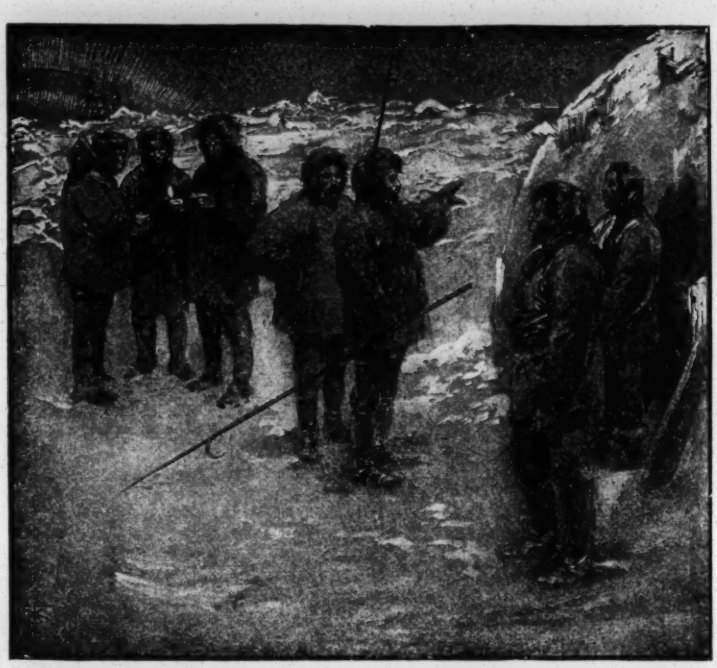
The animal gave a slight start as he felt the prick of the arrow on his flank, and turned partly round, sniffing the air for a scent, and looking about as if searching for the insect that had bitten or stung him. Detecting nothing, he stood still and unalarmed. At the end of a minute, or a minute and a half at most, his head drooped a little, as if he was sleepy.

When the hunter saw this he rose and stepped out in plain sight. The deer turned his head and looked at him, and moved forward, not away from him, a few steps and stopped. He showed no fear, but simply curiosity. After another minute the professor and I rose, and all three walked quietly to within reach of him.

He made no movement to run away, but watched us intently, and shifted his position a little. His movements seemed perfectly easy and natural. Absence of fear was the only observable change, until at the end of three minutes more; then it laid down, not falling, but as naturally as a cow or sheep when ready for sleep.

We all approached to its side, and the hunter laid a hand on its shoulder. It looked up at him, but showed no resentment nor fear. Even its breathing seemed easy and natural, which surprised me, as I had heard that death resulted from paralysis of the lungs when caused by urari. At the end of ten minutes, though it opened its eyes when touched, its breath became shorter and slower.

Eighteen minutes after it was struck by the arrow it was dead.



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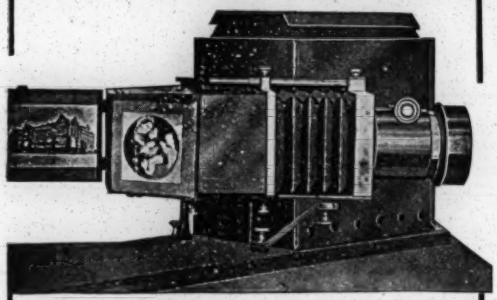

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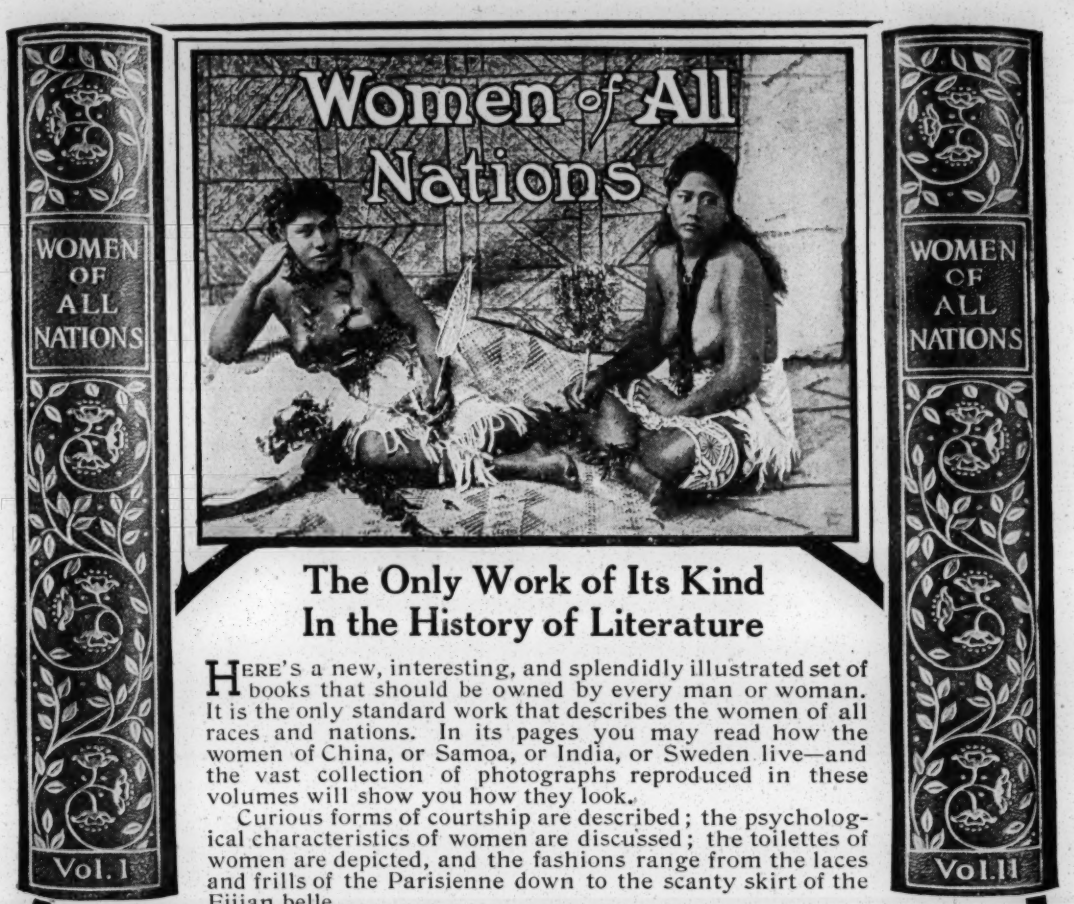

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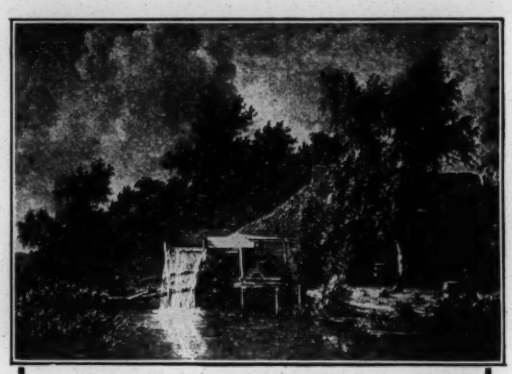

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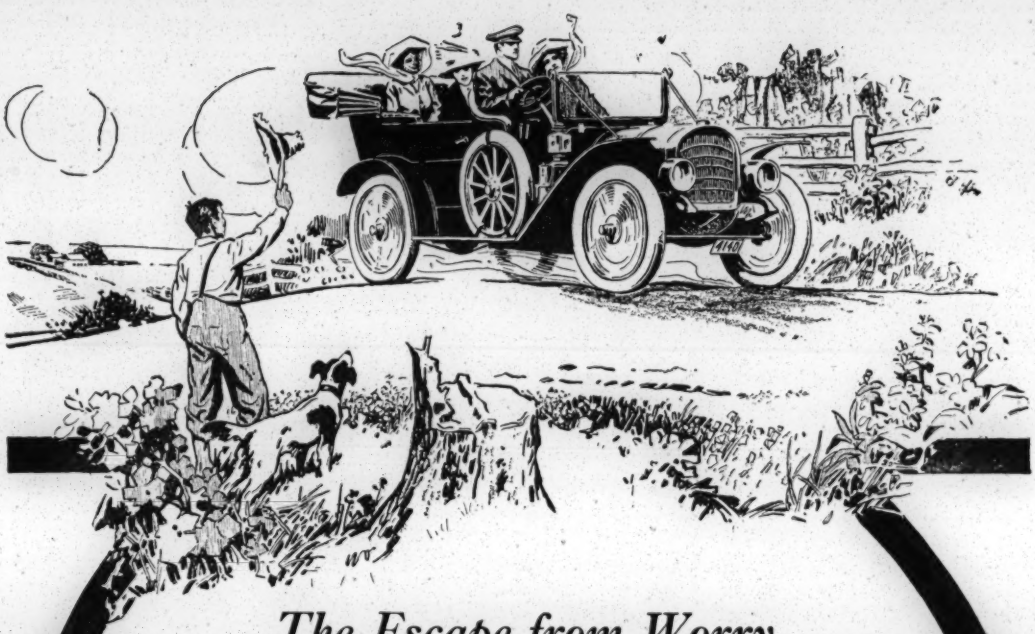

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